GEOGRAPHIC VARIATION IN THE LIZARD *HEMIERGIS DECRESIENSIS* (FITZINGER).

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(Plate vi; five Text-figures.)

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Contents.

I. Introduction.

An attempt has been made to deal with one species of Australian lizards as comprehensively as possible from the taxonomic aspect. Every specimen of the skink *Hemiergis decresiensis* (Fitzinger) from the collections of the Australian Museum, Sydney, and the South Australian Museum has been examined as well as a few from the National Museum, Melbourne, and large New South Wales series in the author's collection. As a result the species has been divided into four subspecies. A standard description is given of a topotype of the typical race *H.d. decresiensis* from Kangaroo Island, to which it is restricted as far as is known at present. The mainland race from South Australia, and probably western Victoria, which approximates most closely to the nominate form, is shown to differ in size and other characters and has been named *H.d. continentis*. The two remaining subspecies—*H.d. talbingoensis* from the Southern Tableland of New South Wales, and probably the north-eastern highlands of Victoria, and *H.d. davisi* from the Northern and Central Tablelands of New South Wales—are shown to differ from one another and *H.d. continentis* in scale and other characters. Records of *H. decresiensis* from Western Australia are queried.

The great majority of species of Australian lizards has probably been described, but much work done on this section of the reptiles remains rather isolated in literature and uncorrelated. There have been few papers on single species in which all material in the museums of the different states has been brought together and correlated against every reference to it in literature. Complete locality records and other references to many species can normally only be found by painstaking search through numerous publications in several languages. Final generalizations on Australian lizards cannot be made until at least a large percentage of species has been given separate comprehensive treatment. Present collections in museums will not permit these studies to be carried out in most cases, either because of the small number of specimens or the fact that they come from restricted localities. Studies approaching completeness will therefore in general entail planned collecting at key points within the area of distribution of each species. The present paper, although reasonably complete for New South Wales and South Australia, suffers through lack of Victorian material.

It may be mentioned here that there is ample justification, in the author's opinion, for retaining the genus *Hemiergis* in spite of the view of Malcolm A. Smith (1937, p. 213) that "such groups as *Siaphos* and *Hemiergis*, which are merely assemblages, mainly of degenerate species, and are not capable of being defined, have been abandoned". In Smith's paper (p. 223 et seq.) all members of this purely Australian genus are placed in *Leiolopisma*. It is clear that *Hemiergis* has been derived from an ancestral stock closely allied to the modern *Leiolopisma*, but the links have disappeared. The fact that there is marked differentiation and that it has occurred solely in Australia is sufficient to validate the genus even if parallel series were evolved elsewhere.

In the present paper, all relevant literature known to the author has been noted, except bare references the inclusion of which would have added nothing of significance.

There are so many small differences between the 250 odd specimens of the four subspecies examined that to compare each holotype with the topotype of *H.d. decresiensis* and then note variations within each race at another stage removed would result in hopeless confusion. The unavoidable course of giving detailed descriptions of the nominate race and *H.d. talbingoensis* and *H.d. davisi* has been adopted. The small number of specimens (26) and the fact that they are closely allied allow the Kangaroo Island and South Australian forms to be treated together.

II. Hemiergis decresiensis (Fitzinger).

Zygnis decresiensis Fitzinger, 1826, p. 53. *Tridactylus decresiensis* Cuvier, 1829, p. 64; Gray, 1831, p. 72 and 1839, p. 333. *Hemiergis decresiensis* Duméril and Bibron, 1839, p. 766; Gray, 1845, pp. 87 and 272; Steindachner, 1867, p. 50, part; Günther, 1875, Plate 6, fig. 5; Lucas and Frost, 1894, p. 24; Lucas and Le Souef, 1909, p. 255; Waite, 1927, p. 326, and 1929, p. 161. *Hemiergis polylepis* Günther, 1867, p. 48. *Lygosoma decresiense* Boulenger, 1887, p. 327; Lönnberg and Andersson, 1913, p. 9; Zietz, 1920, p. 216. *Lygosoma (Hemiergis) decresiense* Werner, 1910, p. 481, in error; Proctor, 1923, p. 81. *Hemiergis decresiense* Loveridge, 1934, p. 368.

Duméril and Bibron (1839, p. 766) give the following synonymy, points of which are dealt with in the preceding list or later in this paper, while, because of lack of data, others could not be checked:

"*Tridactylus Decresiensis* Péron, *Mus. Par.* *Zygnis Decresiensis* Fitz., *Neue classif. Rept. Verzeichn.*, p. 53, No. 4. *Seps aequalis* Gray, *Ann. Philosoph.*, tom. 10 (1825), p. 202. *Seps* (*Tridactylus Decresiensis* Péron), Leuckart, *Breves animal. quorund. Descript.*, p. 10. *Seps* (*Tridactylus Decresiensis* Péron), *Cuv. Règn. anim.*, 2e edit., tom. 2, p. 64. *Seps* (*Tridactylus Decresiensis* Péron), *Griff. anim. Kingd. Cuv.*, tom. 9, p. 159. *Hemiergis Decresiensis* Wagl., *Syst. amph.*, p. 160. Péron's seps. Gray, Synops. Rept. in *Griffith's Anim. Kingd.*, tom. 9, p. 72. ? *Siaphos aequalis*, id., loc. cit., p. 72. *Peromeles aequalis* Wiegm., *Herpet. Mexic.*, pars 1, p. 11. *Tridactylus Decresiensis* Gray, Catal. slender-tong. Saur., *Ann. of natur. hist.*, by Jardine, tom. 1, p. 333."

One of the references given by Boulenger (1887, p. 327) may be noticed: *Hemiergis decresiensis* Gray, *Zool. Ereb. and Terr., Rept.*, Pl. vi, fig. 5, but this plate was omitted in 1845 and, according to Günther's notes in the introduction, redrawn for the publication of 1875 (see Günther, 1875).

There is no doubt as to the validity of the specific name of *Hemiergis decresiensis* (Fitzinger) and little doubt as to the genus, but considerable uncertainty as to the author. The original lizard or lizards in the Paris Museum were apparently labelled *Tridactylus decresiensis* by Péron, but there was no accompanying publication of the name and description. Accordingly the name was given no standing. This specific name has been since used by all authors (omitting modifications in word endings) with the exception of Günther's *polylepis*. First publication was by Fitzinger (1826, p. 53), and I have to thank Mr. W. A. Rainbow, Librarian at the Australian Museum, for securing me a photostat copy of this rare work. Fitzinger says: "7. *Zygnis decresiensis*. m. Decresische Z. (*Tridactylus decresiensis*. Mus. Paris). Ex Australia, Insula Decres." This is the entire reference and *decresiensis* is marked as a nomen nudum in Sherborn's *Index Animalium*. This would invalidate Fitzinger's claim to authorship of the species. Nevertheless there is not a bare mention of the name bare of context, and it indicates the species better than many type descriptions which have been allowed in this and other groups. Justification may reside in the nomination of the actual specimen or specimens on which the name is based and the place where they were to be found, i.e., "*Tridactylus decresiensis.* Mus. Paris", and the type locality "Insula Decres". Placing the species in the genus *Zygnis* automatically attributes it with the following characters given in the same work (p. 23) in the key to the Scincoidea: "Pedes quatuor: Pori femorales nulli: Digiti non dilatati: Plantae non pentadactylae: tridactylae", but as he includes two other species in the same genus the characters cannot be considered a species description. The next author, Cuvier (1829, p. 64), with: "Une à quatre doigts, dont les postérieurs inégaux (le Tetradactylus decresiensis, Per.) et une à trois, d'ailleurs très semblable à la précédente (Tridactylus decresiensis, Per.). Toutes deux viennent de l'île de Crès, et sont vivipares", adds little or nothing to Fitzinger, but the form of the statement may entitle him to the authorship of the species, which would then be *Hemiergis decresiensis* (Cuvier). If for any cause both authors were ineligible the species must be attributed to Gray (1831, p. 72) with: "Peron's Seps. *Tridactylus Decresiensis*, Peron. Toes 3, 3; hinder unequal, one short and two long, subequal; pale brown, with long dark lines; beneath netted." As far as generic names are concerned, Zygnis Oken 1816, Lehrb. Nat., 3 (2), 284.—Rept. and *Tridactylus* Olivier 1789, Ency. Méth., 4 (Ins.), 26.—Orth., and Lacepède 1799, Tabl. Oiseaux, 11.—Aves, are unavailable and *Hemiergis* Wagler 1830, *Syst. Amph.*, 160, must be used. These last four references are in the form given in Neave's *Nomenclator Zoologicus*, London, 1939.

III. HEMIERGIS DECRESIENSIS DECRESIENSIS (Fitzinger). Pl. vi, fig. 1.

Topotype. No. R.2191 in the South Australian Museum; Kangaroo Island, c. 35.50 S., 137.20 E., 1885.

Description of Topotype.—Rostral* moderately high, area visible from above equal to nearly one-half that of the frontonasal, long concave sutures with the nasals and slightly concave, approximately vertical ones with the 1st supralabials; the nearly straight junction with the frontonasal is about one-third the width of the frontal. Nasals large, not in contact, roughly quadrilateral, long convex sutures with the rostral, frontonasal, and anterior loreal, nearly straight with 1st supralabial; round nostril slightly behind centre, no sign of groove running from it to separate scale. No supranasals. Frontonasal large, subequal in area to the frontal, with which it forms a suture about one-eighth the width of the latter scale, also in contact with prefrontals, nasals, rostral and anterior two-thirds of the upper margin of the anterior loreal. Prefrontals large, well developed, four-sided, sutures long and slightly convex with frontonasal, nearly straight with frontal, concave with 1st supraciliary, concave against the anterior and straight against the posterior loreal, point of contact with 1st supraocular. Frontal kite-shaped, indented in front against the frontonasal and rounded behind between the frontoparietals, pointed laterally where frontal, prefrontal, 1st supraciliary and 1st supraocular touch, long, straight, postero-lateral sides against 1st and 2nd supraoculars, shorter antero-lateral sutures with prefrontals. Frontoparietals paired, large, subequal in size with the interparietal, left scale a rough crescent, twice as long as wide, inner convex border against parietal, interparietal and its fellow, outer border nearly straight against 2nd, 3rd and 4th supraoculars, indented against frontal; right frontoparietal in contact with the same scales, but more squat, roughly pentagonal, and pointed mediad between interparietal and left frontoparietal, suture with frontal only about one-third the length of the contact of the left frontoparietal with the same scale. The interparietal kite-shaped, smaller than frontal, rounded behind, pointed in front and at sides, sutures long and straight with parietals, shorter with frontoparietals, concave with left, sinuous with right; a rounded milky area in the midline one-third the length of the scale from the posterior end covers the pineal foramen. Parietals are the largest head shields, irregularly shaped and at least twice as long as wide, meeting in an oblique suture behind the interparietal, other sutures straight and long with the interparietal, shorter and slightly concave with frontoparietals, very short with 4th supraocular, 8th supraciliary, and 2nd postocular, straight with upper secondary temporal, left scale in contact with two dorsal

* For designation of scales see illustration of *H.d. davisi* (Figs. 2 and 3).

scales, the right with four, one at hardly more than a point. There are no nuchals, if a large irregular scale on the left be excluded. Seven supralabials, the anterior three roughly quadrilateral, their upper margins forming a nearly straight, horizontal line with the nasal, loreals and lower preocular, postero-dorsal angles of the 1st and 2nd project backwards, that of 3rd does not, the smaller 4th is under the 1st subocular, and the 5th, which is much smaller again, under the 2nd and 3rd suboculars; 6th and 7th are large, the posterior three scales are pentagonal, haystack-shaped, lower margins horizontal, anterior and posterior sutures vertical, and the other two sides meeting in a point dorsally, size in decreasing order, 6, 7, 2, 3, 1, 4, 5, 5th under centre of eye. Primary temporal roughly oblong, two posterior borders against upper and lower secondary temporals and 7th supralabial, anterior two against the 2nd and 3rd postoculars, 4th subocular, and 6th supralabial. There are two secondary temporals. Body scales begin behind the parietals, secondary temporals and 7th supralabial. The two loreals are squarish quadrilaterals, slightly higher than long, the anterior between nasal, frontonasal, prefrontal, posterior loreal and 1st and 2nd supralabials, the posterior between the anterior loreal, prefrontal, 1st supraciliary, upper and lower preoculars and 2nd supralabial. The single well-defined chain which forms the upper palpebral series and the irregular scales forming the lower palpebral series abut against the upper preocular, which is also in contact with the 1st supraciliary, the upper accessory palpebral (a small scale intercalated between the lower margins of the anterior two supraciliaries), lower preocular and posterior loreal. The lower preocular is twice the size of the upper and lies between it, the posterior loreal, 2nd (narrowly) and 3rd supralabials, 1st subocular and the lower accessory palpebral (a small scale below the anterior end of the palpebral series). The first three of the four suboculars are pentagonal with points running down between the 3rd, 4th, 5th and 6th supralabials; the 4th is oblong and between the 3rd subocular, 6th supralabial, primary temporal and 3rd postocular. All are in contact with small scales forming that portion of the eyelid before, behind and below the transparent disc. The postoculars are three small scales, the 1st about half the size of the 3rd, which is about half that of the 2nd, lying between the 7th and 8th supraciliaries, parietal, upper secondary temporal, primary temporal, 4th subocular and a group of postpalpebrals; the 1st, which is anterior, lies against the junction of the 2nd and 3rd, the latter scale being antero-ventrally placed. Of the eight supraciliaries the 1st and 8th are by far the largest with the 7th much larger than the remaining five, the 1st is a triangular scale meeting the frontal at a point and lying between prefrontal, 1st supraocular, 2nd supraciliary, upper preocular, and posterior loreal; the 7th is roughly triangular, between the 4th supraocular, 6th and 8th supraciliaries, the last of the upper palpebral chain and 1st postocular; the 8th lies in the angle between 4th supraocular and parietal and is in contact with the 7th supraciliary and 2nd postocular. There are four large supraoculars, the 2nd being the largest, the frontal is in contact with the 1st and 2nd, the frontoparietal with the 2nd, 3rd and 4th, and the parietal with the 4th. The transparent disc in the lower eyelid is undivided, convex, lens-like, about half the length of the eye. The lower palpebral series forms a rim above, underneath which there are about 12 small, nearly equidimensional scales. A few small scales margin the disc before, and postero-ventrally there are three larger scales, one against the 4th subocular and two against the 3rd. The large mental and postmental are followed by three pairs of chin-shields, the 1st pair in contact, the 2nd separated by a large, azygous scale, and the 3rd by three small, rhombic scales. There are seven infralabials, the first three small; all except the 1st are elongated, the 4th being the longest.

The ear, the centre of which is about seven scales behind the mouth, slants obliquely downwards and forwards as a shallow, ill-defined, scale-covered depression. It is seven or eight scales long.

Scales are 24 at midbody, subequal, but slightly larger dorsally. Caudal scales larger, 14 rows around tail at length of hindlimb behind vent. Two much enlarged preanal scales with two smaller ones at each side. Scales from above vent to parietals, 66.

Body much elongated, the distance between the end of the snout and the forelimb is contained twice in the distance between axilla and groin. Limbs small and weak, especially the forelimbs, separated by about one and a half times the length of the hindlimb when adpressed. Lamellar formula for fingers, 5, 6, 6, about 10 tubercles on palm. Lamellar formula for toes, 6, 8, 7, about 10 tubercles on sole, larger ones around margin surrounding the smaller, inner ones.

Measurements of R.2191 are given with those of the other topotypes.

Ground colour of the specimen, preserved about 60 years ago, was apparently golden-brown. Heavy dark brown dorsolateral lines begin on the 1st supraciliary, run through the upper secondary temporal and along the body occupying one-half to two-thirds of the 4th row of scales. The upper third is left clear along most of the body. Behind the vent the line changes to the 3rd row. The tail is regenerated, but the line probably continues normally to the tip, becoming increasingly irregular. Four longitudinal lines running between the dorsolaterals are dotted in outline, most dots being small. They are missing on many scales. The inner pair continues on to the tail, where the lines become more pronounced. The outer, more prominent, pair dies out just posterior to the hindlimbs. Limbs dorsally, and tail ventrally heavily spotted. Head shields with large, irregular, dark brown markings. Throat and neck scales with brown-dotted margins giving a reticulated pattern. Belly practically immaculate.

Specimens of Hemiergis decresiensis decresiensis *examined.*

6 (R.2191-6, S. Aust. Mus.), Kangaroo Island, S. Aust., 1885. 1.

In this and the following three lists the number of specimens is given first, followed by the catalogue number, locality, collector's name if available, date, and finally a number giving the locality on the accompanying map (Fig. 1). Every specimen on the four lists has been examined by me.

Fig. 1.—Locality map. Only type localities, States and State capitals are shown by names. Other localities are represented by numbers which tally with the last figure of each entry in the four lists of specimens examined.

Variation in Topotypes (excluding Provisional Neotype).—In the other five specimens of the subspecies available (R.2192–6), the rostral agrees exactly with that of R.2191. There is an apparent discrepancy in R.2196 where the rostral is quite typical, but the frontonasal is abnormally large so that the area of the former scale visible from above is equal to only one-quarter of that of the latter. The suture with the frontonasal includes about four-fifths of the upper margin of the anterior loreal in four cases, only one-third in R.2195. In R.2193 the frontonasal is in contact with the 1st supraciliary and is widely separated from the posterior loreal and 1st supraocular. In all specimens the 1st supraocular and prefrontal are in contact. No specimen agrees with R.2191 in having the scales meeting at a point. In four cases there is a short suture while in R.2195 it is more than half the length of the 1st supraocular. Two specimens have the prefrontals separated by 1/20 the width of the frontal, one by $\frac{1}{10}$, one by $\frac{1}{8}$ and one by $\frac{1}{6}$. Average separation (including R.2191) is 0·108. The frontal shows only slight variation in its proportions. It does not touch the 1st supraciliary. The frontoparietals, in spite of their normally irregular shape individually, differ very little through the series. In R.2196 the suture of the right frontoparietal with the frontal is slightly longer than that of the left with the same scale, which is normally three times as long. In all specimens the oblique suture between the parietals slants backwards towards the left. In R.2196, as in R.2191, there are no nuchals but a single large irregular scale on the left. R.2193 has an irregular pair. In R.2192 the post-parietal rows of scales are somewhat irregular while in R.2194 and R.2195 they extend back in uniform rows. Four specimens have typical supralabials, but in R.2194 there are eight on each side apparently through the interpolation of a high, narrow scale before the normal 4th. Unlike R.2191, the posterior loreal touches the 3rd supralabial in all specimens. In R.2193, where the 1st supraciliary extends abnormally forward, the upper preocular is in contact with the 2nd supraciliary only; in the other four specimens with the 1st only. The lower preocular meets the 3rd supralabial only, while in R.2191 it also has a suture with the 2nd. Suboculars show only slight irregularity. In R.2194 the 4th is grooved transversely. Postoculars are most uniform. The 1st supraciliary is separated from the frontal. In R.2193 the supraciliary chain is broken after the 4th by the 2nd supraocular which, except for two nodules, meets the upper palpebrals. Here the 1st supraciliary is moved forward until it is in contact with the anterior loreal and frontonasal. All five specimens have two scales against the anterior margin of the 4th subocular, one of the two scales being in contact with the 1st postocular. In R.2191 the upper of the two scales is small or missing. All specimens have 24 scale rows at midbody. There are six lamellae under the 1st toes, eight under the median, while seven, eight and nine lamellae under the 3rd are represented by two specimens each.

The five specimens agree fairly closely with R.2191 in the brown dorsal ground colour and the heavy, black, single dorsolateral lines. The outer of the two pairs of black, longitudinal lines between the dorsolaterals may be nearly continuous (R.2194–5) or faintly outlined by dots, but it is always more pronounced than the inner pair except on the tail. The lizards are somewhat bleached, but tails and throats were apparently heavily spotted ventrally and the underside of the body practically immaculate.

Generally all six topotypes (including R.2191) agree closely in scale and colour characters. They all belong to Group B in the table of colour patterns given with paratypes of *H.d. talbingoensis*.

Measurements of H.d. decresiensis *in mm.*

Number	R.2191	R.2192	R.2193	R.2194	R.2195	R.2196
Snout-vent	45	40	43	33	26	40
Tail	36+	43+	34+	35+	19+	16+
Snout-ear	7	7	7	6	5	6
Snout-forelimb	14	13	12	10	9	10
Axilla-groin	28	25	27	20	15	25
Head, length	7	6	7	6	5	6
Head, width	6	5	6	4·5	4	4·5
Body, width	6	5	6	5	4·5	—
Forelimb, length	6	6	6	4·5	4	5
Hindlimb, length	8	9	8	6	5·5	7

Unfortunately Fitzinger's type of *Hemiergis decresiensis*, which may still be in existence in Europe, has not been examined. On the other hand, there is no doubt as to the identification of the specimens dealt with here. The type locality, Kangaroo Island, is a comparativly small area where, in spite of considerable collecting, only a single species of lizard with three fingers and three toes is known to exist. This fact and the close agreement of the South Australian Museum specimens R.2191–6 with original descriptions leave no reasonable doubt that they are identical with the type. A British Museum specimen mentioned by Gray (1845, pp. 87 and 272) and Boulenger (1887, p. 327) from the Paris Museum may be a cotype. Gray (1845, p. 272) says: "Inhab. Kangaroo Island. Mus. Paris, 1 specimen." A description of a topotype of *H.d. decresiensis* is given in full in the present paper. The holotype does not appear to have been mentioned specifically since the original description nearly 120 years ago. It may have been lost and in any case is now inaccessible.

For these reasons R.2191 in the South Australian Museum may for the present be regarded as a provisional neotype.

It is realized that six is an unsatisfactorily small number of specimens on which to establish standards, but there is no choice. *Hemiergis d. decresiensis* is doubtless very rare on Kangaroo Island. The six specimens dealt with are the only ones in the South Australian Museum and they were collected in 1885. The holotype and the three specimens in the British Museum are the only others mentioned specifically in literature, bringing the total known to 10. Collectors such as E. le G. Troughton who have visited Kangaroo Island failed to find specimens. It is probable that the position cannot be permanently clarified until some herpetologist spends several weeks collecting on the island with this one problem in view.

Boulenger (1887, p. 327) has given the only full description of *H.d. decresiensis* of which I am aware. One of his two specimens was a topotype from Kangaroo Island, the other Günther's type of *Hemiergis polylepis*. Both had 24 midbody scale rows. Boulenger's key (1887, p. 223), drawn up when only the Kangaroo Island and possibly the South Australian races were known, includes *H. tridactylum* and the four subspecies defined in this paper.

Proctor (1923, p. 81) expressly mentions the Kangaroo Island individual: "One specimen of this rare skink from Flinders Island. The British Museum has only four specimens, one of which is from Kangaroo Island." Flinders Island is one of the Investigator's Group off the coast of South Australia. Parker (1926, p. 203) makes this Flinders Island specimen (No. 1922.11.8.32 in the British Museum) the type of a new species, *Lygosoma* (*Rhodona*) *terdigitatum*, chiefly on the grounds of the "much larger frontal, which is broader than the supraocular region and longer than the interparietal and frontoparietals together, a larger transparent disc and the absence of suboculars separating the upper labials from the orbit". It may be noticed also that the small and widely separated prefrontals separate the individual generically from *Hemiergis* while the 20 scales at midbody are at variance with the 24 or 26 scales of the Kangaroo Island and South Australian mainland subspecies.

Waite (1927, p. 328) remarks on distribution: "This species occurs throughout southern Australia and is found sparingly on Kangaroo Island and on Flinders Island in Nuyts Archipelago." The Flinders Island record is doubtless that of Proctor's single specimen of *Lygosoma* (*Rhodona*) *terdigitatum* Parker.

Gray (1831, p. 159) says of *Tridactylus Decresiensis* (now *Hemiergis decresiensis*) and *Tetradactylus Decresiensis* (now *H. peronii*) "both were from the island of Décrès and are viviparous".

Gray's short description (1831, p. 72) and the references of Fitzinger and Cuvier have been given earlier.

Günther (1867, p. 48) gives the following description of his *Hemiergis polylepis*: "very similar to *H. decresiensis*, but with smaller scales, the body being surrounded by 26 series (in *H. decresiensis* by 18 or 20). Also the toes are more developed, the anterior as well as the posterior being conspicuously longer than the eye. Posterior frontals well developed. 72 scales in a series between the axils of the fore and hind limbs. South Australia. 4 inches long". He later (1875, p. 14) gave the habitat of *H. polylepis* as "South Australia, Kangaroo Island". It is apparent that *polylepis* must be placed in the synonymy of *H.d. decresiensis*, which has the same number of scale rows and was described from Kangaroo Island 41 years earlier.

Duméril and Bibron (1839, p. 766), after describing the head scales in moderate detail, give the following comparison of *Hemiergis decresiensis* with "le Tetradactyle de Décrès", i.e., *Hemiergis peronii*: "Sous le rapport des formes, si l'on en excepte la différence qui existe entre le nombre des doigts, cette espèce représente exactement le Tetradactyle de Décrès dans tous ces détails. Son mode de coloration est aussi absolument le même que celui de ce dernier Scincoïdien. Longueur totale 10″ 2‴; Tête, long. 9‴; Cou, long. 9‴; Tronc, long. 3″; Memb. antér., long. 8‴; Memb. postér., long. 1″; Queue, long. 5″ 4‴. C'est également à la Nouvelle-Hollande et particulièrement dans l'île de Décrès que se trouve la présente espèce d'Hémiergis."

The last paragraph does not enable one to determine whether the specimen described came from Kangaroo Island or the mainland. Relative proportions are similar to those of either *H.d. decresiensis* or *H.d. continentis*, except for greater lengths of head and limbs. If from Kangaroo Island the specimen is 3 mm. longer in snout-vent measurement than the largest of the topotypes in the South Australian Museum R.2191.

IV. Hemiergis decresiensis continentis, n. subsp. Pl. vi, fig. 2.

Diagnosis: *Hemiergis decresiensis continentis* is separated from the typical subspecies *H.d. decresiensis* by larger size, greater body length and stouter habitus, also the minor differences given in the tables and descriptions.

Holotype. No. R.2190, South Australian Museum; Myponga, S. Aust., 35.25 S, 138.20 E. H. M. Hale. No date.

Description of Holotype.—Except for larger size and stouter habitus, R.2190 differs little from the nominate subspecies. The rostral tends to be higher and more strongly developed. Three-quarters of the upper margin of the anterior loreal is in contact with the frontonasal. The frontal is narrowly in contact with the 1st supraciliary, separating the prefrontal and 1st supraocular. In all Kangaroo Island specimens the prefrontal and 1st supraocular meet. There is a pair of large, irregular nuchals. Supralabials are deeper and more pronounced, especially the anterior three, than in the insular form. The lower preocular touches the 2nd supralabial at a point as well as being widely in contact with the 3rd. The postoculars are normal except that the 1st is not in contact with the 2nd. One of two comparatively large scales against the anterior edge of the 4th subocular is in contact with the 1st postocular. Formulae for lamellae under fingers, 5, 6, 6; under toes, 6, 8, 8. Heavy black dorsolateral lines extend from the eye along the tail. The head is flecked with black and there are three black patches on the median line behind the neck. The whole of the throat and underside to the forelimbs is reticulated with black, each scale having a dark margin thickest posteriorly. The underside is yellowish-white. The tail is longitudinally spotted with black. The pattern is that of Group C in the table given under paratypes of *H.d. talbingoensis.*

Specimens examined and Locality Records of Hemiergis d. continentis.

1 (R.2190, S. Aust. Mus), Myponga, S. Aust. (H. M. Hale). No date. 2.
4 (R.2197-200, S. Aust. Mus.), between Gawler and Tanunda, S. Aust. No date. 3.
2 (R.2201-2, S. Aust. Mus.), South Australia. No date.
10 (R.8434-6, Aust. Mus.), Adelaide, S. Aust. (Pres. L. Harrison). Oct., 1924. 4.
1 (R.8531, Aust. Mus.), Victoria (Pres. Thomas Steele). Nov., 1924.
2 (D.1715-6, Nat. Mus.), Victoria. No date.

The number of specimens does not always tally with that of the tags, which are sometimes, as in the Australian Museum series from Adelaide, attached to more than one individual.

Variation in Auxiliotypes.—The single specimen from Myponga has been made the holotype. The 17 individuals (two from the National Museum were returned before detailed comparisons were made) now compared with the holotype cannot be considered paratypes as they are from different localities. There is apparently no accepted term for this class of specimens; paratypes *sens. lat.* being inadvisable because of possible confusion with the strict paratypes, which in the case of lizards must at least be topotypes. Because they are used to help define a new form the name auxiliotype (supporting type) has been applied to them in this paper. Auxiliotypes are defined as types, not holotypes or paratypes, used by an author to assist his original descriptions of new species or subspecies. In the valuable paper of Davis and Lee (1944, p. 18), the metatype "a specimen compared and declared conspecific with the true type by the original author" could include this category, but "both homoeotype and metatype are taken as implying that the comparison post-dated the publication of the original description" and exactitude is again sacrificed.

The rostral in mainland specimens tends to be higher and more developed than in the nominate subspecies from Kangaroo Island, although in eight of the 17 specimens there is no great difference. In R.2202 and one of R.8435 the area visible from above is equal to two-thirds that of the frontonasal. Width of the suture between rostral and frontonasal to the width of the frontal varies from one-third to one-eighth. Between one-third and four-fifths of the upper margin of the anterior loreal is in contact with the frontonasal. In five specimens the prefrontal meets the 1st supraocular in a point, in nine in a short suture, while in three (which agree with the holotype) the two scales are separated by the junction of the frontal and 1st supraciliary. Frontoparietals are regular in 15 specimens. In R.2199, instead of the suture of the right frontoparietal with the frontal being only about a third the length of the contact of the left frontoparietal with the same scale as normally, the position is reversed. In one of the R.8434 specimens the scales are abnormal and the left is cut off widely from contact with the frontal by the right frontoparietal with which the anterior third of the left has evidently fused. In 15 cases the suture between the parietals has the normal slant backwards towards the left, but in two the direction is reversed towards the right. In R.2197, R.2200 and one of the R.8435 series the parietal meets the 4th supraocular at little more than a point. No specimen has nuchals, but there is a large irregular scale on the right in R.8531 and two irregular scales on the left in R.2202. Post-parietal scales are regular in nine specimens, irregular in six. Supralabials are deep and sharply cut as in the holotype in 14 specimens. In three they are lower, being somewhat similar to those of *H.d. decresiensis*. In R.2199 the supralabials are normal on the left side, but reduced to six on the right, apparently by the fusion of the third and fourth scales. The posterior loreal is narrowly in contact with the 3rd supralabial in six cases, three of which are at a point. The lower preocular touches only the third of the supralabials in seven specimens. In R.2199 the 1st and 2nd suboculars have fused on each side and on the left the 5th supralabial reaches nearly to the margin of the eye behind the fused scales. In R.2201, where the 3rd postocular is much enlarged, the usually comparatively large and oblong 4th subocular is small and rounded. There is a tendency in all mainland specimens for the 1st postocular to be moved forward and reduced in size. The 1st postocular is not in contact with the 2nd in six individuals. In R.2201 the first scale is nearly equal in size to the second. In R.2199, which is irregular in other scale

Measurements of H.d. continentis *in mm.*

Number.	Snout-Vent.	Tail.	Snout-Forelimb.	Axilla-Groin.	Head. Width.	Head. Length.	Body. Width.	Length. Fore-limb.	Length. Hind-limb.
R.2190 ..	52	58	15	35	6	8	8	5	8
R.2197 ..	46	53	12	31	4·5	6	5	6	8
R.2198 ..	43	31+	12	27	5	6·5	6	6	8
R.2199 ..	44	18+	12	28	5	6	5	5·5	8
R.2200 ..	42	49	12	28	4·5	6	5	6	8
R.2201 ..	46	49+	14	31	5·5	7	7	6·5	8
R.2202 ..	50	41+	15	31	5·5	7	6	5	7
R.8434 ..	47	31+	13	31	5·5	6·5	6	6	8
	46	22+	13	32	6	7	7	6	9
	46	50+	12	30	6	6·5	6·5	6·5	9
R.8435 ..	54	64	14	36	6	6·5	7	6·5	9
	47	52+	14	33	6	6·5	6·5	7	8
	53	54+	13	35	6·5	7	7	6·5	8
R.8436 ..	49	28+	12	31	5	7	6·5	5·5	8·5
	48	38+	13	30	5·5	6·5	5·5	5·5	7·5
	52	60	14	32	5·5	7	6·5	6	8
	52	29+	14	35	5·5	6·5	6	6·5	8
R.8531 ..	46	34+	13	32	5	7	6	5	8
D.1715 ..	44	—	13·5	25	—	—	—	—	8
D.1716 ..	33	—	11	20	—	—	—	—	7

characters, the 2nd and 3rd postoculars have fused on the right side and partly on the left. In R.2199 the anterior two supraciliaries have partly fused. Six specimens agree with R.2190 in having one of the two large scales against the 4th subocular in contact with the 1st postocular. Eight have two scales against the subocular but no contact with the 1st postocular. In three cases there is a single scale. Colour and markings of 14 of the 19 specimens agree essentially with those of *H.d. decresiensis* (Group B), but three specimens from between Gawler and Tanunda agree with the holotype in having both pairs of dorsal lines vestigial (Group C), while in two from Adelaide both pairs are practically continuous and about equally prominent (Group A).

Main reasons for the separation of the mainland race from the closely allied typical form are: greater body length (average 47 mm. against 37·83 mm.; no specimen of *H.d. decresiensis* exceeds 45 mm., while 40 per cent. of *H.d. continentis* are in excess of this figure); stouter habitus, *H.d. continentis* averaging practically a millimetre more in width of body (6·25 mm. against 5·30 mm.); more robust rostral and supralabials; tendencies for the 1st postocular to be moved forward and reduced in size, and for frontal to meet 1st supraciliary: besides small differences which give an individual aspect to the two subspecies. In the author's opinion separation of the island and continental races is valid and agrees with the views of Mayr (1942), the mammalogist Glover M. Allen (1938 and 1940), and the herpetologists Mertens (1931) and Pope (1935). Mayr's treatment of the whistler *Myiolestes megarhynchus* (p. 43) and the Asiatic bulbul *Microscelis leucocephalus* (p. 83) and in Allen's work of most subspecies, especially those of the genera *Ochotona* (1938, p. 525), *Callosciurus* (1940, p. 626), and *Rattus* (1940, p. 983) may be cited. It should be noted here that the differences between *H.d. decresiensis* and *H.d. continentis* are much slighter than those between either of these races and *H.d. talbingoensis* or *H.d. davisi*, or again the differences by which the two latter forms are distinguished from one another.

Lönnberg and Andersson (1913, p. 9) record two specimens from Adelaide collected on October 15, 1911.

Loveridge (1934, p. 368) gives brief notes on the four specimens of *H. decresiensis* in the Museum of Comparative Zoology, Cambridge, Massachusetts. The lizards (M.C.Z. 33155–8) were collected by W. M. Wheeler at Mt. Lofty, S. Aust., in 1931. Midbody scale rows number 24 or 26, and the largest skink measures 103 (49 + 54) mm. Both Loveridge's and Lönnberg and Andersson's specimens may be taken as belonging to the subspecies *continentis*.

V. Hemiergis decresiensis talbingoensis, n. subsp. Pl. vi, fig. 3.

Diagnosis: *Hemiergis decresiensis talbingoensis* is separated from the typical subspecies *H.d. decresiensis* by the lower number of midbody scale rows (22 in the holotype against 24: average for 94 specimens examined 21.74), lower number of lamellae beneath mid-toe (seven in the holotype against eight: average for 96 specimens examined 7.18). There are also differences in scalation, colour and size, these three points being dealt with in the tables and descriptions.

Holotype. Author's Collection, No. 2081; Talbingo, N.S.W., 35.34 S, 148.20 E. Alt. c. 1300 feet. 3.xii.1943.

Description of Holotype.—Rostral moderately high, area visible from above equal to about half that of the frontonasal; long, concave sutures with the nasals and approximately vertical ones with the 1st supralabials; the nearly straight junction with the frontonasal is about a quarter the width of the frontal. Nasals large, not in contact, roughly quadrangular, long convex sutures with the rostral and frontonasal and shorter straight ones with 1st supralabial and anterior loreal. Oval nostril approximately central, no sign of a groove from it to divide the nasal scale. No supranasals. Frontonasal large, equal in area to the frontal, in contact with frontal, prefrontals, nasals, rostral, and anterior half of upper margin of anterior loreal. Prefrontals large, well developed, separated by a tenth the width of the frontal, sutures long and fairly straight with frontonasal, sinuous with frontal, concave with 1st supraciliary, nearly straight and horizontal with the two loreals, very short with 1st supraocular. Frontal kite-shaped, rounded in front against the frontonasal and behind between the frontoparietals, pointed laterally where frontal, prefrontal, 1st supraciliary and 1st supraocular meet in a point. Long, straight posterolateral sides against the 1st and 2nd supraoculars, concave anterolateral sutures with prefrontals. Frontoparietals paired, large, subequal in size with interparietal, left scale a rough crescent twice as long as wide, inner border long and convex against parietal, interparietal, and its fellow, outer border slightly concave against the 2nd, 3rd and 4th supraoculars, indented anteriorly against posterior end of frontal. Right frontoparietal in contact with the same scales, but more squat and pointed mediad between interparietal and left frontoparietal, suture with frontal only about one-third the length of the contact of left frontoparietal with the same scale. Interparietal kite-shaped, subequal in size with the frontal, rounded behind, pointed in front and at sides, sutures long and straight with parietals, shorter with frontoparietals, concave with left, sinuous with right; a rounded milky area in the midline one-third of the length of the scale from the posterior end covers the pineal foramen. Parietals are the largest head shields, forming a V-shaped pair enclosing the interparietal, irregularly pentagonal, meeting behind the interparietal in an oblique suture slanting backwards towards the left; other sutures are straight and long with interparietal, short and slightly concave with frontoparietals, very short with 4th supraocular, 8th supraciliary and 2nd postocular, long and straight (about parallel to the one with the interparietal) with upper secondary temporal, left scale in contact with two rows of dorsal scales, the right with three, there being no nuchals. Seven supralabials, the anterior three roughly quadrilateral, their upper margins forming a straight line with the nasal, loreals and lower preocular, posterior four pentagonal with lower margins horizontal, anterior and posterior sutures vertical, the other two sides meeting in a point dorsally. Size in decreasing order, 7 = 6, 3, 2, 1, 4, 5; 5th under centre of eye. Primary temporal roughly oblong, two posterior borders against upper and lower secondary temporals and 7th supralabial, anterior borders with 6th supralabial, 4th subocular, and 2nd and 3rd postoculars. There are two secondary temporals (the upper being much the larger) and a tertiary temporal. Body scales begin behind the parietals, upper secondary temporal, tertiary temporal, and 7th supralabial. The two loreals are oblong, slightly higher than wide, the anterior between the nasal, frontonasal, prefrontal, posterior loreal and 1st and 2nd supralabials, the posterior between the anterior loreal, prefrontal, 1st supraciliary, upper and lower preoculars and 2nd supralabial. The upper and lower palpebral series abut against the upper preocular, which is in contact with the 1st supraciliary, the upper accessory palpebral (a small scale intercalated between the lower margins of the 1st and 2nd supraciliaries), the posterior loreal, lower preocular and lower accessory palpebral. The lower preocular is twice the size of the upper and lies between the upper preocular, posterior loreal, 3rd supralabial (meeting the 2nd in a mere point), 1st subocular and lower accessory palpebral. The first three of the four suboculars are pentagonal with downwardly-directed points lying between the supralabials, the posterior scale is roughly oblong and lies between the primary temporal, 3rd postocular, 6th supralabial and 3rd subocular. The postoculars are three small scales, the 1st one-third to half the size of the 3rd, which is smaller than the 2nd, lying between the 4th subocular, primary temporal, upper secondary temporal, parietal, 7th and 8th supraciliaries and the small scales behind the eye. The 2nd and 3rd lying immediately against the anterior border of the primary temporal separate that scale from the 1st postocular. Of the eight supraciliaries, the 1st, 7th and 8th are by far the largest, the 1st a large triangular scale between the prefrontal, 1st supraocular, posterior loreal, upper preocular, upper accessory palpebral and 2nd supraciliary; the lozenge-shaped 7th and 8th lie between the 4th supraocular, 6th supraciliary, the last of the upper and lower palpebral chains, 1st and 2nd postoculars, and parietal. There are four large supraoculars, the 3rd being the largest; the frontal is in contact with the 1st and 2nd; the frontoparietal with the 2nd, 3rd and 4th; and parietal with the 4th. The transparent disc in the lower eyelid is undivided, convex, and lens-like, slightly longer than half the length of the eye aperture and larger than the pupil. The large mental and postmental are followed by three pairs of chin-shields, the 1st pair in contact, the 2nd separated by a large azygous shield, and the 3rd separated by three small scales. Infralabials are six if a small scale behind the 6th is not counted; all except the 1st are elongated, the 5th being twice as long as wide. The ear about six scales behind the mouth runs obliquely downwards and forwards as a shallow, scale-covered, slit-like depression. There are about four scales on its anterior border.

Scales 22 at midbody, subequal, but slightly larger dorsally. Tail scales larger, 15 rows around tail at length of hindlimb behind vent. Four preanal scales, inner pair much larger than outer. Scales from above vent to parietals, 76. Body much elongated. The distance between the end of the snout and the forelimb is contained 3·1 times in the distance between axilla and groin. Limbs small and weak, especially the forelimbs, separated by nearly three times the length of the hindlimb when adpressed. Lamellar formula for fingers, 5, 6, 5. Ten enlarged rounded tubercles on palm. Lamellar formula for toes, 5, 7, 8. Five flattened tubercles on sole surround five larger, more prominent ones.

Measurements of the holotype are given with those of the paratypes.

Colour. Ground colour of head, body and tail is light chocolate. A black dorsolateral line begins just behind the eye in the black postoculars, runs through the upper secondary temporal, which is half black, and along the third row of dorsal scales. The line, half a scale wide, runs through the centre of the scales, leaving dorsal and ventral quarters untouched. Just behind the vent, the line switches to the second row from the midline and continues to the tip of the tail, being discontinuous along the posterior half. Two black, longitudinal lines begin behind the parietals and follow the first row of dorsal scales on each side. They are about a quarter scale wide and not quite continuous, the black pigment normally occupying only the anterior three-quarters of each scale. The lines become more discontinuous on the tail where they are very irregular for the distal half. Traces of two other black lines on the second rows of scales extend along seven or eight scales behind the parietals as dots and then as very occasional flecks to the end of the body. Dark brown to black patches occur on all head shields. Under high power they are seen to consist of hundreds of deep brown dots. Sides of the body are of the ground colour becoming gradually lighter ventrally. Small black dots tend to form ill-defined lines along each lateral scale row. Dark markings crowd together on the sides of the tail. The underside is immaculate for six scales from the forelimbs to near the vent where the clear area narrows to four scales' width. The throat and neck nearly to the forelimbs appear reticulated with dark brown caused by the posterior third of each scale being beset with scores of tiny brown dots. Mental, postmental, and chin-shields are especially dark. Scales behind vent are white with perhaps a quarter black, but each scale becomes progressively darker posteriorly until the distal half of the tail is crowded with dark brown to black spots. The pattern is that of Group H.

Variation in Paratypes.—The rostral is remarkably uniform in all 52 paratypes. The only variation is in the length of the suture with the frontonasal compared with the width of the frontal. Twelve specimens agree with the type, about $\frac{1}{4}$ the width, but in 40 it is much less (29, $\frac{1}{6}$; 10, $\frac{1}{10}$; while the nasals are nearly in contact in one). Nasals, which are regular, are separated from the 2nd supralabial by a quarter to a third the width of the 1st, but approach contact in the holotype and only one paratype. Relation of the frontonasal to surrounding scales varies very little, most specimens agreeing with the type in being in contact with about half the upper margin of the anterior loreal. In 19 cases the length of the contact is about two-thirds, in seven about four-fifths, while in A.C. 2008 and A.C. 2011 it is in contact with the entire upper margin. In A.C. 2059 the lower portion of the scale is cut off on the right to form a small triangular scale. In 22 cases the prefrontals meet the 1st supraocular in a short suture. The two scales are only separated in four specimens. In A.C. 2082 they are separated on one side but meet on the other. The remainder have the scales meeting at a point or suture so short that it may be classed as such. In A.C. 1687 the lower two-fifths of the right scale is divided off by a transverse suture. Separation of the prefrontals to the width of the frontal: 1, $\frac{1}{2}$; 2, $\frac{1}{3}$; 5, $\frac{1}{4}$; 8, $\frac{1}{5}$; 7, $\frac{1}{6}$; 11, $\frac{1}{8}$; 7, $\frac{1}{10}$ (as holotype); 6, 1/20; 5, in contact. The frontal is normally half as long again as wide, an occasional individual being nearly twice as long as wide, while a few are nearly as wide as long. Most frontal scales are smooth or have a few minute pits. A few, such as A.C. 2047, are heavily pitted. These remarks on pitting apply to most of the head shields. Lateral angles of the frontoparietals sometimes approach closely but never touch the 8th supraciliary. In A.C. 2083 the right is partly fused to the 2nd supraocular. A.C. 2013 has a process running back between the interparietal and parietal. The interparietal varies in its degree of elongation, sometimes being very squat. In A.C. 2014 it is abnormal and only about half the size of the frontal, while in A.C. 2044 it is very well developed and larger than the frontal. In A.C. 2087 the scale is unusually rounded with a process between the right frontoparietal and parietal. The number of dorsal scales touching the parietals varies from two to four on each side, but the number is normally larger on the left, where in one case (A.C. 2085) it meets a fifth at a point. The number of scales in contact depends generally on the presence of irregular nuchals or large unpaired post-parietal scales. A.C. 2087 has the right parietal divided into three irregular scales, two large with a smaller one between them. In only two specimens does the suture between the parietals slope backwards towards the right. Thirty-four specimens agree with the holotype in having no nuchals, the body scales running back sometimes quite regularly, but often the anterior one or two rows are irregular. In seven cases there is an irregular pair of nuchals, in four there is a large unpaired scale on the left, in five on the right, while one specimen has two large unpaired scales on the right and another two on the left. The 1st supralabial about as high as long in the type, is most often longer than high. The 7th and 6th scales are always the largest but the others may be practically equal in size and frequently the 1st ranks after the 7th and 6th. Generally the order in size agrees with that of the holotype. A.C. 2015 has eight supralabials on each side due to an additional large scale being intercalated between the normal 3rd and 4th; the 1st scale remains normal but the next three are narrow and high. Outlines of the remainder are as usual. The 6th (normal 5th) is under the centre of the eye. Of interest in showing how abnormalities occur symmetrically, a small scale occurs on the right and left sides of A.C. 2039 between the 2nd and 3rd supralabials, posterior loreals and lower preoculars, yet in A.C. 2041 and A.C. 2058 a similar scale occurs on the right side only. A.C. 2031 has the 5th and 6th scales irregular and fused on the right side. In A.C. 2056 the right primary temporal is fused with the 2nd postocular and thus brought into contact with the 1st postocular and 8th supraciliary. In A.C. 2059 where the upper secondary temporal is divided and abnormally developed on the right side, the primary temporal is cut off by it from the lower secondary temporal. The upper secondary temporal is divided in A.C. 2012. The posterior loreal meets the 3rd as well as the 2nd supralabial in 10 cases. A.C. 2033 has the upper and lower preoculars partly fused. Twenty individuals have the lower preocular meeting the 2nd supralabial in a short suture as against a mere point in the type. Suboculars are generally most regular. There are five on each side in A.C. 2015 and A.C. 2045. Three scales replace the normal anterior two in A.C. 2020 on the right side. In one of R.12084 the first is small and the second divided on each side. A.C. 2031 has the 3rd scale on the right side broken down into an aggregate of small scales. A.C. 2054 has the 2nd and 3rd separated by a process of the 5th supralabial. The postoculars vary greatly in size and shape, being oblong or lens-shaped. The 2nd and 3rd are often comparatively large with a long suture between them. The 1st is always very small. In A.C. 2012 the right 2nd postocular is separated from the parietal and in A.C. 2041 the left. Supraciliaries are most regular in number, order and size for such attenuated chains. A.C. 2016 has the 6th scale on the right divided to give nine supraciliaries on that side. Supraoculars vary little in their relationships with other scales. The only noteworthy variation from the holotype is that the 2nd scale is larger than the 3rd in about 80 per cent. of specimens. A.C. 2014 has the 2nd much larger than the 3rd on each side with an abnormal lenticular scale, truncated against the supraciliaries, on the right side. A.C. 2020 has a large semi-circular scale cut off from the anterior margin of the postmental. The normally small scale behind the 6th infralabial is often large and assumes the status of a 7th infralabial. Again the 6th is often large and unmistakably the terminal scale. In the occasional case where the posterior border of the 7th infralabial is in contact with the 7th supralabial, there is a small 8th scale behind it.

It was found convenient to arrange colour patterns in groups to facilitate analysis and recording. All 258 specimens of the four subspecies were lumped together and then sorted into separate piles mainly on the basis of the relative prominence of the dorsal and dorsolateral lines. All lizards fell into 18 groups with only a small percentage of borderline cases. Sixteen and possibly the other two of the 18 groups indicate geographical grouping of colour patterns; the most conspicuous being Group J, which contains 65 individuals. All but one are *H.d. davisi*, including 27 of the 29 specimens from the Northern Tableland. Full importance probably cannot be attached to Groups Q and R, which are almost uniform in colouration, because lack of pigment may occur independently from various causes. Group G, with faintly dotted dorsolateral and dorsal longitudinal lines, also appears to be composite.

The table for all four races is summarized here. Abbreviations are: d.l., dorsolateral lines, 1 for inner and 2 for outer dorsal lines; H.d. decr. for *H.d. decresiensis*; H.d.c. for *H.d. continentis*; H.d.t. for *H.d. talbingoensis*; and H.d.d. for *H.d. davisi*.

Table of Colour Groups of the Four Races of H. decresiensis.

Group A.	d.l. wide, heavy and black. 1 and 2 practically continuous, about equal.	H.d.c., 2 spms.: Adelaide.
Group B.	d.l. wide, heavy and black. 1 traces. 2 practically continuous or more prominent than 1.	H.d. decr., 6 spms.: Kangaroo I. H.d.c., 14 spms.: 8 Adelaide, 3 Victoria, 2 South Australia, 1 between Gawler and Tanunda.
Group C.	d.l. wide, heavy and black as in A and B. 1 and 2 vestigial.	H.d.c., 4 spms.: 3 between Gawler and Tanunda, 1 Myponga. H.d.t., 6 spms.: 3 Cullerin, 2 Collector, 1 Talbingo. H.d.d., 3 spms.: 1 nr. Abercrombie River, 1 nr. Porter's Retreat, 1 Hampton.
Group D.	d.l. distinct, but not very heavy and inclined to be double. 1 and 2 lightly dotted.	H.d.t., 19 spms.: 11 Talbingo, 6 Mount Kosciusko, 1 Marulan, 1 Goulburn.
Group E.	Much as D, but 1 and 2 more prominent.	H.d.t., 18 spms.: 11 Talbingo, 5 Mount Kosciusko, 1 Cullerin, 1 Collector.
Group F.	d.l. much as in D and E. 1 about equal to d.l., 2 faint.	H.d.t., 11 spms.: 6 Talbingo, 2 Mount Kosciusko, 2 Victoria, 1 Cullerin.
Group G.	d.l. 1 and 2 dotted, fairly faint.	H.d.d., 8 spms.: 1 Curraweela, 1 Duckmaloi River, 1 Oberon, 1 Hampton, 1 Black Springs, 1 Tarana, 1 Hartley Vale, 1 Capertee. H.d.t., 7 spms.: 6 Talbingo, 1 Adaminaby.
Group H.	d.l. very heavy. 1 continuous or nearly so. 2 faintly outlined in dots or missing.	H.d.t., 13 spms.: 7 Talbingo, 3 Cullerin, 2 Collector, 1 Goulburn.
Group I.	d.l. light. 1 very distinct and continuous. 2 traces.	H.d.d., 4 spms.: 3 Hartley, 1 Lett River, nr. Hartley.
Group J.	d.l. continuous or nearly so, about quarter scale wide. 1 as d.l. 2 faintly dotted or missing. Four-lined pattern.	H.d.d., 64 spms.: 12 Salisbury, 8 Oberon, 6 "Southern Australia", 6 Hartley, 6 Armidale, 4 Llangothlin, 4 Bendemeer, 4 Black Springs, 4 Tarana, 2 Rydal, 2 Little Hartley, 1 Lett River, nr. Hartley, 1 Duckmaloi River, 1 Hampton, 1 Forest Reefs, 1 Liverpool Plains, 1 Lithgow. H.d.t., 1 spm.: Mount Kosciusko.
Group K.	As J, but 2 approaching that of L.	H.d.d., 2 spms.: 1 Rydal, 1 "Southern Australia".

Group L.	d.l. 1 and 2 continuous or practically continuous black lines. Six-lined pattern.	H.d.d., 6 spms.: 1 Bendemeer, 1 Laggan, 1 Curraweela, 1 Hampton, 1 Armidale, 1 Bundanoon. H.d.t., 1 spm.: Talbingo.
Group M.	As L, but d.l. heavier.	H.d.d., 5 spms.: 2 Curraweela, 2 Hampton, 1 Black Springs.
Group N.	d.l. 1 and 2 composed of uniform dots, each occupying about a sixth of a scale.	H.d.d., 8 spms.: 2 9 m. N. of Abercrombie River, 2 Curraweela, 1 5 m. N. of Abercrombie River, 1 Porter's Retreat, 1 Duckmaloi River, 1 Hampton.
Group O.	d.l. 1 and 2 dotted lines, which may be double and scarcely distinct from the lateral lines.	H.d.d., 17 spms.: 5 5 m. N. of Abercrombie River, 4 11 m. N. of Abercrombie River, 2 Curraweela, 2 Porter's Retreat, 1 Oberon, 1 Hampton, 1 Black Springs, 1 Tarana.
Group P.	As O, but lines lighter.	H.d.d., 11 spms.: 4 Black Springs, 2 Duckmaloi River, 1 Hampton, 1 Hartley, 1 10 m. from Jenolan Caves, 1 9 m. N. of Abercrombie River, 1 5 m. N. of Abercrombie River.
Group Q.	Close to R, but flecks and suggestions of markings.	H.d.t., 16 spms.: 8 Talbingo, 5 nr. Adaminaby, 2 Mount Kosciusko, 1 Cullerin. H.d.d., 7 spms.; 2 Hampton, 2 5 m. N. of Abercrombie River, 1 Hartley, 1 10 m. from Jenolan Caves, 1 Tarana.
Group R.	Uniform dorsal ground colour, without markings.	H.d.t., 4 spms.: 2 Talbingo, 1 nr. Adaminaby, 1 Mount Kosciusko. H.d.d., 1 spm.: Hampton.

Summary of Table.

Group.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.
H.d. decresiensis	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H.d. continentis	2	14	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H.d. talbingoensis	—	—	6	19	18	11	7	13	—	1	—	1	—	—	—	—	16	4
H.d. davisi	—	—	3	—	—	—	8	—	4	64	2	6	5	8	17	11	7	1

All Talbingo specimens in the table are paratypes. Twenty-two of the 52 specimens fall in Groups D and E (11 each) with distinct but not very heavy dorsolaterals, and light or slightly more prominent dorsals. Six specimens occur in each of the three following groups, one each in C and L and 10 in the nearly uniform Groups Q and R.

Measurements of the Holotype and Ten Paratypes of H.d. talbingoensis *in mm.* (*Specimens with Complete Tails Chosen.*)

Number.	Snout-Vent.	Tail.	Snout-Forelimb.	Axilla-Groin.	Head. Length.	Head. Width.	Length. Fore-limb.	Length. Hind-limb.
A.C.2081	60	74	14	43	7·5	6·5	6	9
A.C.1687	43	60	13	29	6·5	5	5·5	8
A.C.2008	55	69	14	37	7	6	6·5	8
A.C.2020	37	46	11·5	23	6	4·5	4·5	7
A.C.2030	53	65	13	35	7	6	6	8
A.C.2033	53	67	14	35	7	5·5	6	8
A.C.2043	35	43	10	22	6	4·5	5·5	6·5
A.C.2046	50	66	15	32	7·5	6	6	9
A.C.2054	59	71	15	42	8	6	6	8·5
A.C.2055	54	67	13	36	7	5·5	5·5	8
A.C.2083	50	70	14·5	32	7	6	6	8·5

Specimens examined and Locality Records of Hemiergis d. talbingoensis.

1 (A.C. 1515) 4 m. W. of Marulan, N.S.W., 18.i.1943. 5
1 (A.C. 1661) 8·3 m. N. of Adaminaby, N.S.W., 27.i.1943. 6.
1 (A.C. 1687) 1·8 m. SE. of Talbingo, N.S.W., 28.i.1943. 7.
9 (A.C. 1964—6, 1973-7, 1979) 2·5 m. W. of Cullerin, N.S.W., 20-22.xi.1943. 8.
50 (A.C. 2008-20, 2030-48, 2053-60, 2080-9) within 2 m. of Talbingo, N.S.W., 28.xi.-3.xii.1943. 7.
6 (A.C. 2134-9) 2·3 m. N. of Adaminaby, N.S.W., 6.xii.1943. 6.
5 (A.C. 2159-63) 2 m. N. of Collector, N.S.W., 9.xii.1943. 9.
2 (D 2459-60, Nat. Mus.) Victoria. No date.
12 (R 469-73, 475-81, Aust. Mus.) Mt. Kosciusko, N.S.W., 3,000 ft. (R. Helms), May, 1889. 10.
3 (R 530, 532-3, Aust. Mus.) Mt. Kosciusko, N.S.W., 5,000 ft. (R. Helms), May, 1889. 10.
2 (R 531, 534, Aust. Mus.) Mt. Kosciusko, N.S.W. (R. Helms), May, 1889. 10.
2 (R 2393-4, Aust. Mus.) Goulburn, N.S.W. (J. A. Thorpe), Oct., 1898. 11.
2 (R 12084, Aust. Mus.) Talbingo, N.S.W. (J. C. Wiburd), April, 1937. 7.

In this and the following list all specimens in the author's collection (prefixed A.C.) have been collected by him unless a collector's name is given.

Variation in Auxiliotypes.—Twenty-five of the 43 auxiliotypes examined agree with the type in having the area of the rostral visible from above equal to about half that of the frontonasal, the area in the remainder being about a third; sutures of the rostral with the frontonasal equal a quarter that of the frontal, as in the type, in 16 cases, $\frac{1}{6}$ in 15, $\frac{1}{10}$ in six, and nearly $\frac{1}{2}$ in six. In R 533, A.C. 1976 and A.C. 2161 the nasal approaches contact with the second supralabial. In R 480 grooves extend across the nasal scales from the nostrils. In A.C. 2163 a peculiar, narrow, bow-shaped scale running between the anterior loreals margins the entire anterior border of the frontonasal, separating it from the rostral and nasals. In this specimen the frontonasal is considerably larger than the frontal. The posterior part of the frontonasal in R 476 is cut off to form a large, lens-shaped scale; in A.C. 1964 the scale is partly divided on the right side. The frontonasal is slightly smaller than the frontal in most specimens, but in A.C. 1966, A.C. 1976, A.C. 1977 and A.C. 2161 it is considerably larger. Nineteen specimens have the frontonasal in contact with about half the upper margin of the anterior loreal, 18 with about $\frac{2}{3}$, five with $\frac{4}{5}$, and R 481 with practically the entire border. The suture of the frontonasal with the frontal (equal to the separation of the prefrontals) is very narrow in the nine Cullerin specimens (where four specimens have the prefrontals in contact or nearly so, two separated by 1/20 the width of the frontal and three by $\frac{1}{10}$, average separation 0·04). Figures for other specimens are Marulan $\frac{1}{8}$, Goulburn $\frac{1}{8}$ and $\frac{1}{6}$, Victoria two nearly in contact, Adaminaby (two in contact or nearly so, one $\frac{1}{10}$, one $\frac{1}{5}$, two $\frac{1}{4}$, one $\frac{1}{3}$, average 0·16), Collector (one in contact, one 1/20, two $\frac{1}{10}$, one $\frac{1}{5}$, average 0·09), Mt. Kosciusko (one in contact, one $\frac{1}{10}$, three $\frac{1}{8}$, two $\frac{1}{6}$, two $\frac{1}{5}$, five $\frac{1}{4}$, two $\frac{1}{3}$, average 0·20). In five specimens the prefrontals are separated from the 1st supraocular by the meeting of the 1st supraciliary and frontal. Contact of the prefrontals with the 1st supraocular varies from a fairly wide suture to little more than a point. Normally one and a half times as long as wide, the frontal is equidimensional in three specimens and twice as long as wide in six. A.C. 1661 and A.C. 2136 have the frontal fused with a small scale cut off from the left frontoparietal. The normally elongated left frontoparietals are practically equidimensional in a few cases. The interparietal is occasionally as wide as long and in A.C. 1515, A.C. 2138, A.C. 2139 and A.C. 2163 it is wider than long, larger than the frontal, and approaching twice the size of a frontoparietal. The parietals always meet but the suture is sometimes very short, in nine cases (R 472, R 475, R 476, R 479, A.C. 1966, A.C. 1975, A.C. 1979, A.C. 2134, A.C. 2160) the suture slopes backwards towards the right. Most specimens agree with the type in having no nuchals, but about a third have an irregular pair or a large unpaired scale on either the right or left side. Normally the 1st supralabial is about square, but it is elongated or taller than broad in a few lizards. It is often the third largest of the seven scales. The 6th supralabial is occasionally larger than the 7th. R 532 and A.C. 2137 have only six supralabials while A.C. 1965 has eight, three scales replacing the normal 2nd and 3rd. On the left side separation is not quite complete. A.C. 1966 has the primary temporal reduced in size and roughly lens-shaped. In A.C. 1974 the scale is separated from the 4th subocular. The right primary temporal of R 534 is partly fused with the 7th supralabial. The tertiary temporal is very variable, generally tall and lens-shaped; it is occasionally indistinguishable from the body scales except by its position. The posterior loreal, which may taper ventrally to a very short contact with the 2nd supralabial, is in contact with the 3rd as well as the 2nd supralabial in five specimens and meets the scale at a point in another three cases. The anterior loreal is divided transversely in A.C. 1964. In 20 specimens the lower preocular meets the 2nd supralabial in a short suture. A.C. 1965 has five suboculars on each side and A.C. 1964 five on the right only. In R 534 the 2nd and 3rd suboculars are separated widely on the right side by the abnormally developed 5th supralabial. A.C. 1661 has the fourth abnormally large and in contact with the 7th supralabials as has R 2393 on the right side. The 2nd postocular is usually twice the size of the 3rd and four times that of the 1st, the 1st being small and lenticular, the 2nd large and lenticular, and the 3rd practically square. A.C. 1979 has the 1st as large as the 3rd. There are eight supraciliaries in all specimens, except A.C. 1661, which has nine through the intercalation of an additional scale above the eye, and A.C. 2162 with a very large scale on the right side above the eye, reducing the total number to six. The 2nd supraocular is the largest in 27 cases. Contact of the 4th supraocular with the parietal may be at a mere point. Two specimens R 532 and A.C. 2137 have five infralabials, and R 534 and A.C. 1965 seven. The left of the first chin-shields in A.C. 2137 has fused to the postmental. The depression of the ear varies from a wide, shallow area to a comparatively narrow slit with a deep pocket about the centre. All specimens of *H.d. talbingoensis* in the table except those from Talbingo are auxiliotypes. Nine of the 18 groups are represented, two by only one specimen each. Lack of dorsal and dorsolateral lines is evidently characteristic of populations near Adaminably where, of seven individuals, one is uniform in colour, five have dorsal flecks, and one has six faintly dotted lines.

Measurements of Ten Auxiliotypes of H.d. talbingoensis *in mm.* (*All Specimens with Complete Tails Included.*)

Number.	Snout-Vent.	Tail.	Snout-Forelimb.	Axilla-Groin.	Head. Length.	Head. Width.	Length. Fore-limb.	Length. Hind-limb.
A.C.1661	55	33	15·5	36	7	6	6	8
A.C.1966	53	71	15	35	8	6	6	9
A.C.1973	54	77	15	33	7	6·5	6	9
A.C.1976	61	73	15	43	7·5	6	5·5	8
A.C.1979	50	67	14·5	32	7	5·5	6	8
A.C.2135	61	55+	15	43	8	6	5·5	7·5
A.C.2136	54	67	13·5	37	7	6	5·5	8
A.C.2139	27	27	9	16	5	4	3	4·5
A.C.2161	47	61	13	31	7	6	5·5	7
A.C.2163	31	37	10	19	5	4·5	5	6

Table of Midbody Scale Rows and Lamellae under Median Toes of H.d. talbingoensis *Itemized by Localities.*

Locality.	Number of Scale Rows. 20	21	22	24	Number of Lamellae. 6	7	8	Number of Specimens.
Marulan	—	—	1	—	—	1	—	1
Cullerin	—	—	9	—	1	7	1	9
Adaminaby	5	—	2	—	4	3	—	7
Collector	1	—	4	—	1	4	—	5
Victoria	—	—	2	—	1	1	—	2
Mt. Kosciusko	8	2	7	—	3	14	—	17
Goulburn	—	—	2	—	—	2	—	2
Total: auxiliotypes	14	2	27	—	10	32	1	43
Talbingo: holo- and paratypes	—	—	51	2	1	24	28	53
Total: all specimens	14	2	78	2	11	56	29	96

Hemiergis d. talbingoensis is an upland form occurring at altitudes between 1,300 and 5,000 feet. At the lower elevation the race is found in mountain valleys. It prefers gentle slopes where the soil under logs and stones is just moist. I have never collected a specimen where the ground was normally dry or wet. At Talbingo, where the subspecies is common on hillsides leading down to the Tumut River, they were absent from the dry crests of ridges between small creeks as well as at the swampy margins of the watercourses. On the intervening slopes they were, in places, found under practically every log. I did not find them in grass packed against the sides of logs not yet begun to rot, which was a favoured habitat of *Leiolopisma guichenoti.* They prefer half-rotted logs under which mould has collected. They are absent under timber which has been eaten out by insects leaving a dry, cardboard-like interior, probably because termites and other insects on which they depend for food have moved elsewhere. Grassy slopes on which fallen logs give cover appear to be the chosen habitat of the lizards. Of 73 specimens collected by me, at least 65 were under logs. Cullerin was the only locality where lizards were found under stones. Field notes show that of the nine specimens collected near Cullerin, three were under stones, one under a log, and five under stones and logs. I have never seen one abroad in the daytime. They seem to be strictly cryptozoic, seeking their food in mould under logs in the darkness. Scales, especially those of the head, in most individuals bear longitudinal scratches caused by grit and other sharp objects encountered while burrowing. When uncovered by lifting a log, they remain perfectly still for several seconds and are then easy to capture. After the first surprise they move away rapidly with a wriggling, snake-like motion. Once buried in mould they are hard to find again. I have never seen a lizard using its weak limbs to move in a direct line with its body straight. *H.d. talbingoensis* is apparently fairly resistant to cold for no specimen was too sluggish to make an effort to escape, unlike, for example, *Leiolopisma entrecasteauxii* (Duméril and Bibron) and *Siaphos equalis* (Gray), which often remain curled up making no attempt to escape when disturbed in cold weather.

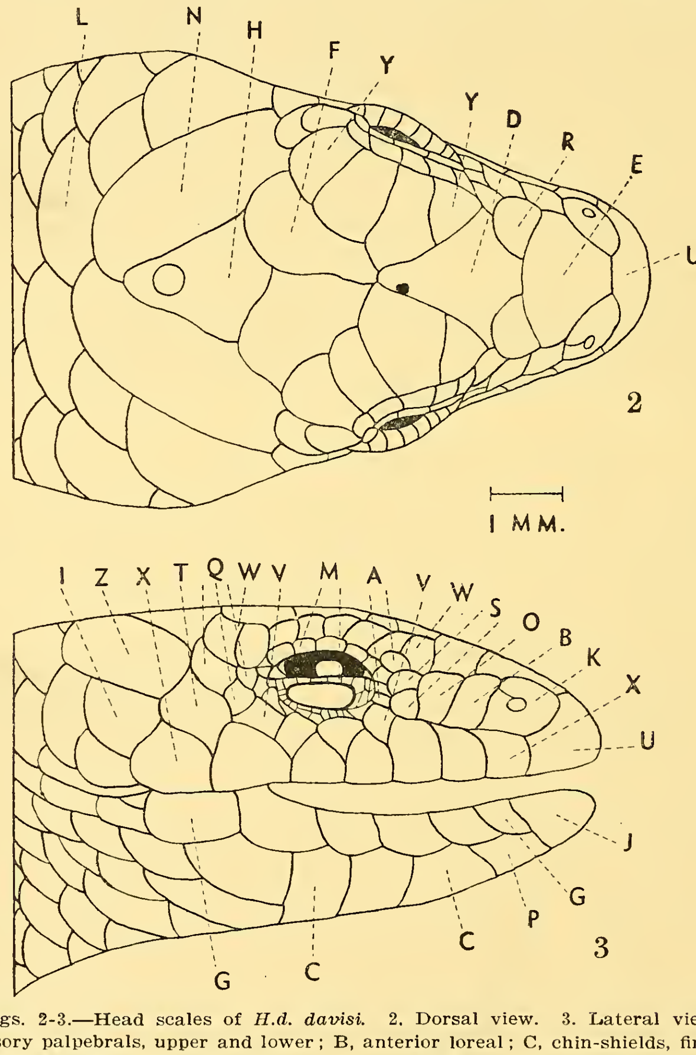
Lucas and Frost (1894, p. 24), who probably included specimens of *H.d. talbingoensis,* follow Boulenger's description except for measurements and give notes on habits and distribution. They say "Habits similar to *Hemiergis peronii*", i.e., "found under logs and flat stones on the hillsides and in gullies. Movements very slow". Distribution is given as Ferntree Gully and Beechworth in Victoria, South Australia and Kangaroo Island.

VI. Hemiergis decresiensis davisi, n. subsp. Pl. vi, fig. 4.

Diagnosis: *Hemiergis decresiensis davisi* is separated from the typical subspecies *H.d. decresiensis* by the lower number of midbody scale rows (20 in holotype against 24: average for 136 specimens examined 19·90), lower number of lamellae beneath mid-toe (six in the holotype against eight: average for 133 specimens 5·77). Other points of difference in scalation, colour (especially the four-lined dorsal pattern: Group J) and size are dealt with in the tables and descriptions.

Holotype. Author's Collection, No. 821; Poison Swamp Creek, 2·7 miles south of Bendemeer, N.S.W., which is 30·51 S., 151·10 E. Altitude c. 2,500 feet. 5.xii.1940.

Description of Holotype.—Rostral moderately high, area visible from above equal to half that of the frontonasal, long concave sutures with the nasals and nearly straight, approximately vertical ones with the 1st supralabials; the fairly straight junction with the frontonasal is about a quarter the width of the frontal. Nasals large, not in contact, roughly quadrilateral, sutures long and convex with the rostral and frontonasal and shorter and about straight with 1st supralabial and anterior loreal; the round nostril is slightly behind the centre, there is no sign of a groove running from it on the left side, but on the right a depression runs back from the upper margin to the anterior loreal. No supranasals. Frontonasal large, subequal in area to the frontal, also in contact with prefrontals, nasals, rostral and anterior two-thirds of upper margin of anterior loreal. Prefrontals large, well developed, sutures long and nearly straight with frontonasal, convex with frontal, nearly straight with 1st supraciliary, which separates it rather widely from the 1st supraocular, slightly concave with posterior loreal, only narrowly in contact with anterior loreal. Frontal kite-shaped, not much longer than broad, rounded posteriorly against left frontoparietal, slightly indented anteriorly against frontonasal and at sides against 1st supraciliaries, long nearly straight postero-lateral sides against 1st and 2nd supraoculars, shorter, slightly concave, anterolateral sutures with prefrontals. Frontoparietals paired, subequal in area with interparietal, left scale a rough crescent, twice as long as wide, long median convex border against parietal, interparietal and right frontoparietal, irregular outer border against 2nd, 3rd and 4th supraoculars, indented slightly against frontal; right frontoparietal in contact with the same scales, except frontal, but in shape squat and roughly quadrilateral, pointed between interparietal and left frontoparietal, separated from frontal by 2nd supraocular. Interparietal kite-shaped, approximately similar in shape and size to the frontal, rounded behind, pointed in front and at sides, sutures long and nearly straight with parietals, shorter with frontoparietals, concave with left, slightly sinuous with right; a rounded milky-coloured area in the midline one-third of the length of the scale from its posterior end covers the pineal foramen. Parietals are the largest head shields, irregularly shaped, at least twice as long as broad, meeting in an oblique suture behind the interparietal, other sutures are straight and long with interparietal, shorter and concave with frontoparietals, very short with 4th supraocular, 8th supraciliary and 2nd postocular straight



Figs. 2-3.—Head scales of *H.d. davisi.* 2. Dorsal view. 3. Lateral view.

A, accessory palpebrals, upper and lower; B, anterior loreal; C, chin-shields, first and third; D, frontal; E, frontonasal; F, frontoparietal; G, infralabials, first and sixth; H, interparietal; I, lower secondary temporal; J, mental; K, nasal; L, nuchal; M, palpebral series, upper and lower; N, parietal; O, posterior loreal; P, postmental; Q, postoculars, first, second and third; R, prefrontal; S, preoculars, upper and lower; T, primary temporal; U, rostral; V, suboculars, first and fourth; W, supraciliaries, first and eighth; X, supralabials, first and seventh; Y, supraoculars, first and fourth; Z, upper secondary temporal.

with upper secondary temporal, left scale in contact with two dorsal scales, right with three. There is one unmistakable pair of nuchals. Seven supralabials, the anterior three roughly quadrilateral with postero-dorsal points of the first two directed backwards; the upper margins of the scales form a straight line with the nasals, loreals and lower preocular; posterior four pentagonal, haystack-shaped, lower margins horizontal, anterior and posterior sutures vertical, the other two sides meeting in a point dorsally. Size in decreasing order, 7, 6, 3, 2, 1, 5, 4, 5th under centre of eye. Primary temporal a rough square, antero- and postero-ventral sides between 6th and 7th supralabials, postero-dorsal side against upper secondary temporal, point between posterior sides narrowly in contact with lower secondary temporal, antero-dorsal side in contact with 2nd and 3rd postoculars and 4th subocular. There are two secondary temporals, the upper twice the size of the lower, which is subequal to the primary temporal. Body scales begin behind the parietals, secondary temporals and 7th supralabials. Scales behind the secondary temporals are slightly enlarged. The two loreals are roughly oblong, slightly higher than long, the anterior is between the nasal, frontonasal, prefrontal, posterior loreal and two anterior supralabials, the posterior between the anterior loreal, prefrontal, 1st supraciliary, upper and lower preoculars and 2nd supralabial. The upper and lower palpebral series abut against the upper preocular, which is also in contact with the 1st supraciliary, the upper accessory palpebral (a small scale intercalated between the upper palpebral series and the 1st and 2nd supraciliaries), the posterior loreal, lower preocular and the lower accessory palpebral (a small scale between the anterior of the lower palpebral series and the 1st subocular). The lower preocular is twice the size of the upper and lies between it, the posterior loreal, 3rd supralabial, 1st subocular and the lower accessory palpebral. There are four suboculars, the anterior three roughly equidimensional with downwardly-directed wedge-shaped points lying between the supralabials; the 4th is oblong, the 3rd is the largest and the 4th the smallest. The 4th lies between the primary temporal, 3rd subocular, 3rd postocular, 6th supralabial and the small postpalpebral scales. The postoculars are well developed, the 2nd being larger than the 4th subocular and equal to the 8th supraciliary. There are eight supraciliaries, the anterior and posterior scales largest and flexed away from the curved chain formed by the other six. The 7th is also large and the chain could be taken as ending either with or against it; in the former case a name would have to be given to the posterior scale and, in the latter, names to the two posterior scales. It is simpler to regard the whole eight scales as members of the supraciliary chain. The 1st supraciliary is irregularly quadrilateral, lying between the prefrontal, frontal, 1st supraocular, 2nd supraciliary, upper accessory palpebral, upper preocular and just touching the posterior loreal. The 8th lies between the 4th supraocular, parietal, 1st and 2nd postoculars and 7th supraciliary. The posterior scales of the upper and lower palpebral series and a number of small postpalpebral scales abut against the 7th supraciliary. There are four large supraoculars, the 2nd by far the largest; the 3rd is comparatively small and bandlike on the right side but well developed on the left, the 1st is separated from the prefrontal by the 1st supraciliary, the frontal is in contact with the 1st and 2nd, and the frontoparietal with the 2nd, 3rd and 4th. The transparent disc in the lower eyelid is undivided, convex, and lens-like, more than half the length of the eye aperture. Its upper rim is one scale wide, and before and behind it is bounded by groups of small scales. The large mental and postmental are followed by three pairs of chin-shields. the 1st pair in contact, the 2nd separated by a large median scale, and the 3rd by three small scales. There are six infralabials, the 1st is higher than long, but they gradually become more elongated posteriorly until the 6th, which is twice as long as high.

The ear about six scales behind the mouth runs obliquely downwards and forwards as a shallow, scale-covered, slit-like depression, deepest postero-dorsally over the actual ear. There are about four scales along its anterior border.

Scales 20 at midbody, subequal, but slightly larger dorsally. Caudal scales larger, subcaudal row widest, 13 rows round the tail at length of hindlimb behind vent, number decreasing progressively to tip of tail, where the terminal scale is spine-like and at least twice the length of nearby scales. Four preanal scales, inner pair greatly enlarged, outer pair very small. Scales from above vent to parietals, 78. Body much elongated;

the distance between the end of the snout and the forelimb is contained 3·14 times in the distance between axilla and groin.

Limbs small and weak, especially the forelimbs, separated by nearly three times the length of the hindlimbs when adpressed. Lamellar formula for fingers, 4, 5, 5. Nine enlarged tubercles, the three largest across the wrist, surround three about the same size. Lamellar formula for toes, 5, 6, 6. Seven large flattened tubercles on the sole surround two of the same size.

Measurements are given with those of the paratypes.

Colour. Ground colour of head, body and tail is medium brown. A black dorsolateral line begins just behind the eye in the 1st postocular, runs through the centre of the upper secondary temporal, and follows the third row of dorsal scales, occupying about the middle third of each scale, to the tail, where at the length of the hindlimb behind the vent, it switches to the second row of scales. It then continues to the end of the tail becoming progressively more irregular. A pair of black dorsal lines about a quarter of a scale wide, begins behind the parietals and runs to the tip of the tail. Continuous on the body, the lines consist of discontinuous wedge-shaped dots on the tail. Slightly interrupted black lines, about a quarter scale wide, run along the second row of dorsal scales, originating just behind the parietals and petering out before the tail, where their position becomes occcupied by the dorsolateral lines. Dark brown to nearly black patches occur on all the head shields, being most concentrated on the supralabials. Under high power they are seen to consist of hundreds of tiny deep brown dots, normally scattered widely at the borders of the patches, then forming dendritic patterns and finally a dense aggregation. Hundreds of minute dots occur on all dorsal, lateral and dorsal caudal scales, darkening the whole colour of the specimen. Five rows of lateral scales below those carrying the dorsolateral lines bear irregular ill-defined longitudinal lines, formed by an aggregation of pigment about the centre of most scales. These dark markings become more pronounced on the tail and occupy more of each scale until those near the tip are practically all black. Ventral scales are yellow, each, with the exception of a few midway between the limbs, with a brownish dot just behind the centre. These dots become larger posteriorly. The throat and neck to the forelimbs are reticulated with brown, only the centres of the scales being free of dots or nearly so. About half of the two large inner anal scales is occupied by crescent-shaped markings. Scales behind the vent are about half black. The black areas have a brownish margin of dots, and the borders of each scale are yellowish. Scales become progressively darker posteriorly, but some yellow persists to the end of the tail. This is the six-lined pattern of Group L.

The race is named for the late Dr. H. F. Consett Davis, whose death in a plane accident in New Guinea on 12th December, 1944, was a loss to science and his friends.

Variation in Paratypes (A.C. 818–20, A.C. 822).—Minor variation does not affect the essential uniformity of the Bendemeer series of five specimens. The suture between the rostral and frontonasal in A.C. 818 is equal to a quarter the width of the frontal, which is slightly longer than in the other three paratypes and the holotype. No paratype shows any sign of a divided nasal. The prefrontals of A.C. 818 meet in a point, and are separated by a distance equal to a quarter the width of the frontal in A.C. 822, otherwise as holotype. In A.C. 818 the frontal is one and a half times as long as broad. In all four specimens both frontoparietals touch the frontal. In A.C. 819 the suture between the parietals slopes backwards towards the right instead of the normal left. No specimen has nuchals but A.C. 822 has a large irregular scale on the left, and A.C. 818–20 have a large irregular scale on the right. In A.C. 819 the primary temporal is anterodorsally in contact with only two scales—the 2nd postocular and 4th subocular, the 3rd postocular having fused to one of these two scales. The lower preocular is in contact with the 2nd supralabial as well as the 3rd in A.C. 818 and A.C. 819. A.C. 820 has five suboculars on the right side. All paratypes agree with A.C. 821 in having large and well-developed 2nd postoculars at least equal in size to the 8th supraciliary. The 1st supraocular is never in contact with the prefrontal. The distance between the tip of the snout and the forelimb is contained in the distance between axilla and groin 2·64 times in A.C. 818, 2·50 times in A.C. 819 and A.C. 822, and 2·80 times in A.C. 820. Each specimen has six lamellae beneath the middle toes. All paratypes belong to the four-lined pattern of Group J.

Measurements of Holotype and Paratypes of H.d. davisi *in mm.*

Number.	Snout-Vent.	Tail.	Snout-Forelimb.	Axilla-Groin.	Head. Length	Head. Width.	Length. Fore-limb.	Length. Hind-limb.
A.C.818	54	54+	14	37	6·5	5	5·5	8
A.C.819	51	54+	14	33	7	5	5	7
A.C.820	57	35+	14·5	40	7	5·5	5·5	8
A.C.821	60	75	14	44	8	6	6	8
A.C.822	48	51	12·5	30	6	4·5	5	7

Specimens examined and Locality Records of Hemiergis d. davisi.

1 (A.C. 474) Armidale, N.S.W. (C. Davis), May, 1939. 12.
4 (A.C. 522-5) 5·5 m. N. of Llangothlin, N.S.W., 30.x.1939. 13.
1 (A.C. 729) nr. Little Hartley, N.S.W., 11.ii.1940. 14.
1 (A.C. 743) Armidale, N.S.W. (C. Davis), 18.ii.1940. 12.
1 (A.C. 744) 3 m. NW. of Armidale, N.S.W. (C. Davis), Feb., 1940. 12.
7 (A.C. 768-73, 775) 2 m. W. of Hartley, N.S.W., 21.vii.1940. 14.
5 (A.C. 818-22) 2·7 m. S. of Bendemeer, N.S.W., 5.xii.1940. 15.
1 (A.C. 1136) Armidale, N.S.W. (C. Davis), Nov., 1940. 12.
1 (A.C. 1154) Armidale, N.S.W. (C. Davis), 23.xii.1940. 12.
2 (A.C. 1162-3) Lett River, nr. Hartley, N.S.W., 19.ii.1941. 14.
2 (A.C. 1200-1) 10 m. from Jenolan Caves on Hampton Rd., N.S.W., 20.ii.1941. 16.
1 (A.C. 1373) Armidale, N.S.W. (C. Davis), 26.x.1941. 12.
1 (A.C. 1695) 2·3 m. E. of Laggan, N.S.W., 30.i.1943. 17.
3 (A.C. 1701-3) 8·8 m. N. of Abercrombie River on Taralga-Oberon Rd., N.S.W., 31.i.1943. 18.
4 (A.C. 1704-7) 11·2 m. N. of Abercrombie River on Taralga-Oberon Rd., N.S.W., 31.i.1943. 18.
8 (A.C. 1710-7) 3 m. N. of Curraweela, N.S.W., 31.i.1943. 18.
10 (A.C. 1718-27) 5·2 m. N. of Abercrombie River on Taralga-Oberon Rd., N.S.W., 31.i.1943. 18.
1 (A.C. 1732) 7 m. S. of Black Springs, N.S.W., 1.ii.1943. 19.
1 (A.C. 1736) (1·6 m. NE. of Black Springs, N.S.W., 1.ii.1943. 19.
4 (A.C. 1748-51) 5 m. S. of Porter's Retreat, N.S.W., 1.ii.1943. 18.
1 (A.C. 1752) 0·7 m. from Duckmaloi River towards Oberon, N.S.W., 1.ii.1943. 20.
4 (A.C. 1758-9, 1762-3) Duckmaloi River nr. Oberon, N.S.W., 2.ii.1943. 20.
9 (A.C. 1764-72) 3 m. from Oberon on Jenolan Caves Rd., N.S.W., 2.ii.1943. 20.
1 (A.C. 1781) 4 m. from Hampton on Oberon Rd., N.S.W., 4.ii.1943. 16.
11 (A.C. 1799-803, 1812-7) 4 m. from Hampton on Oberon Rd., N.S.W., 23-24.iii.1943. 16.
1 (A.C. 1818) nr. Little Hartley, N.S.W. (D. Ross), 19.iv.1943. 14.
3 (A.C. 1820-2) 1 m. S. of Rydal, N.S.W. (D. Ross), 19.iv.1943. 14.
9 (A.C. 1834-42) 2 m. S. of Black Springs, N.S.W. (D. Ross), 20.iv.1943. 19.
1 (A.C. 2228) 5 m. SE. of Armidale, N.S.W. (C. Davis), 13.iv.1944. 12.
1 (R.994, Aust. Mus.) Forest Reefs, N.S.W. (H. J. McCooey), Feb., 1891. 21.
4 (R.1348-9, 1351, 1353, Aust. Mus.) Hartley, Blue Mts., N.S.W. (R. Grant), Nov., 1892. 14.
1 (R.2514, Aust. Mus.) Tarana, N.S.W. (W. Hawken), June, 1899. 14.
12 (R.2919, 2922-3, 2925, Aust. Mus.) Salisbury, N.S.W. (D. A. Porter), June, 1900. 22.
6 (R.3189-94, Aust. Mus.) Tarana, N.S.W. (W. Hawken), June, 1901. 14.
7 (R.3613-8, Aust. Mus.) Southern Australia. No date.
1 (R.3982, Aust. Mus.) Hartley Vale, N.S.W. (A. H. S. Lucas), no date. 14.
1 (R.3983, Aust. Mus.) Capertee, N.S.W. (A. H. S. Lucas), no date. 23.
1 (R.3984, Aust. Mus.) Bundanoon, N.S.W. (A. H. S. Lucas), no date. 24.
1 (R.3985, Aust. Mus.) Liverpool Plains, N.S.W. (A. H. S. Lucas), no date. 25.
1 (R.10925, Aust. Mus.) Lithgow, N.S.W. (H. E. P. Bracey), May, 1933. 14.
1 (R.12268, Aust. Mus.) Oberon, N.S.W. (C. Davis), 13.x.1937. 20.

Variation in Auxiliotypes (131 Specimens examined).—Length of the suture between rostral and frontonasal to the width of the frontal varies from one-half to one-tenth (4, $\frac{1}{2}$; 27, $\frac{1}{3}$; 35, $\frac{1}{4}$; 23, $\frac{1}{5}$; 21, $\frac{1}{6}$; 12, $\frac{1}{8}$; 8, $\frac{1}{10}$; 1 abnormal). This character has little geographic significance although the suture tends to be wider in northern specimens. A.C. 1136 has the frontonasal divided on the right side so that the main portion is separated from the anterior loreal. A.C.1803 has the scale divided symmetrically on each side so that the main part remains shield-shaped, longer than wide, and the cut-off portions lie between it, the prefrontal, anterior loreal and nasal. In A.C.1154 a similar pair of scales is incompletely separated. In A.C.1801 the prefrontals are enormously developed and occupy most of the area normally taken by the frontal, which is missing; contact between the two prefrontals is longer than the length of the frontonasal. The suture between the frontal and frontonasal is slightly wider in Northern Tableland specimens (including holotype and paratypes) than in those from the Central Tableland, the average distance compared to the width of the frontal being 0·236 (1, in contact; 1, $\frac{1}{10}$; 2, $\frac{1}{8}$; 4, $\frac{1}{6}$; 7, $\frac{1}{5}$; 9, $\frac{1}{4}$; 2, $\frac{1}{3}$; 3, $\frac{1}{2}$) against 0·211 (8, in contact; 4, $\frac{1}{10}$; 13, $\frac{1}{8}$; 13, $\frac{1}{6}$; 15, $\frac{1}{5}$; 28, $\frac{1}{4}$; 23, $\frac{1}{3}$; 1, $\frac{1}{2}$; 2, abnormal). The frontal, normally one and a half times as long as wide, varies from as broad as long to twice as long as broad. The frontal is in contact with the right frontoparietal in all except four cases. A symmetrical scale has formed from portions of the right and left frontoparietals in R.3193, so that three kite-shaped scales—the frontal, the abnormal scale and the interparietal—follow each other down the midline; the remaining sections of the frontoparietals are laterally in contact with only the 3rd and 4th supraoculars. A.C.770 has the posterior third of the left scale divided off; and the anterior portion of the left frontoparietal has fused with the right in R.3189. The interparietal is occasionally squat but normally one and a half times as long as wide. In A.C.1770 it is malformed into an irregular rounded square; in one of the three R.2919 specimens it is reduced in size to one-third the area of a frontoparietal; and in A.C.1749 and A.C.1836 it is fused with the left parietal. The suture between the parietals runs backwards towards the right in 27 individuals, towards the left, as in the type, in 104. About half the specimens have no nuchals, about 15 per cent. one pair, about 10 per cent. two pairs, about 7 per cent. one large scale (in nearly every case on the left side), while the remainder have combinations such as two or three large scales on the left or right; one specimen has three irregular pairs of nuchals. Of 15 specimens with six supralabials, the 4th under the eye, Hampton and Black Springs are each represented by seven and Bundanoon by one. The posterior loreal is rarely in contact with the 3rd supralabial. The lower preocular, which is often three times larger than the upper, is nearly always in contact with the 2nd and 3rd supralabials, but in about one-fifth cases it touches only one of these scales. The 4th subocular is divided on the right side of A.C.1751. There are seven supraciliaries on each side in A.C.1836, seven on the right side only in A.C.1835, R.3190, R.3613 and R.3614. A.C.1801 has immense, abnormal 2nd supraoculars meeting in a wide suture anterior to the frontoparietals. The 2nd supraocular is divided on the right side in A.C. 1799 and R.3616. There are three supraoculars on the right side of A.C.1800, the anterior two having fused, and three on each side in one of the R.2919 specimens, the anterior two on the left side being incompletely separated. The depression of the external ear varies considerably in length and depth.

All specimens of *H.d. davisi* in the colour table, except those from Bendemeer, are auxiliotypes. Sixty of 131 individuals have the four-lined pattern of Group J, two connect this group through Group K to the six-lined pattern L, to which five auxiliotypes belong. Twenty-seven of the 29 specimens from the Northern Tableland belong to Group J (including the four paratypes), and the remaining two (including the holotype) to Group L. Thirty-six Central Tableland specimens belong to the closely allied, exclusively *H.d. davisi*, Groups N, O and P. Lack or scarcity of dorsal pigment is evidently less common in *H.d. davisi* than in *H.d. talbingoensis*. The northern race is represented by only eight cases in Groups Q and R against 20 of the southern although 136 individuals were examined against 96. R.12268 in the Australian Museum, collected at Oberon on 13th October, 1937, by Dr. H. F. C. Davis, is a representative lizard from the Central Tableland. With 20 midbody scale rows and lamellae beneath the three toes, 5, 6 and 6, the colour description is: the four distinct black lines of Group J; head flecked more or less longitudinally with black; sides greyish-black with lighter and darker spots; venter yellow; throat to forelimbs brown-flecked, posterior third of most scales being brown; underside of tail increasingly dark caudad.

Undersides of specimens of *H.d. davisi* (also *H.d. talbingoensis* and probably also the other two races) are very rarely white, more frequently pale lemon-yellow, but in the great majority vary between chrome-yellow and orange.

Measurements of Eighteen Auxiliotypes of H.d. davisi *in mm.* (*Only Specimens with Complete Tails and generally only One from Each Locality Included.*)

Number ..	A.C.522	A.C.729	A.C.773	A.C.1154	A.C.1695	A.C.1705	A.C.1713	A.C.1736	A.C.1762
Snout-vent	55	60	47	45	53	67	53	61	62
Tail ..	63	66	58	55	64	71	70	72	87
Axilla-groin	35	41	30	29	35	46	33	40	38
Snout-forelimb	15	15	13	12	14	15	15	15	16
Number ..	**A.C.1821**	**A.C.1839**	**R.1353**	**R.2514**	**R.2923**	**R.2925**	**R.3189**	**R.3193**	**R.10925**
Snout-vent	63	65	49	56	63	54	60	60	60
Tail ..	72	68	57	65	75	70	80	74	78
Axilla-groin	43	45	32	39	45	38	38	42	39
Snout-forelimb	15	15	13	14	14	13	16	15	16

Table of Midbody Scale Rows and Lamellae under Median Toes of H.d. davisi *itemized by Localities.*

Locality.	Number of Scale Rows.			Number of Lamellae.			
	18	20	22	4	5	6	7
Llangothlin	—	4	—	—	—	3	—
Armidale	—	7	—	—	—	7	—
Liverpool Plains	—	1	—	—	—	—	1
Salisbury	1	10	1	—	—	11	1
Capertee	—	—	1	—	1	—	—
Forest Reefs	—	—	1	—	—	—	1
Lithgow	—	1	—	—	—	1	—
Rydal	—	1	2	—	—	3	—
Tarana	—	6	1	—	—	7	—
Hartley Vale	—	1	—	—	—	—	—
Victoria Pass and Hartley	1	12	2	—	1	14	—
Hampton	8	6	—	2	9	3	—
Oberon	1	13	1	—	4	11	—
Black Springs	5	6	—	2	6	3	—
Porter's Retreat	—	21	—	—	4	15	2
Curraweela	—	8	—	—	1	5	1
Laggan	—	1	—	—	—	1	—
Bundanoon	—	1	—	—	1	—	—
Southern Australia	—	7	—	—	—	7	—
Total: Northern Tableland	1	27	1	—	—	26	2
Total: Cental Tableland	15	84	8	4	27	70	4
Total: auxiliotypes	16	106	9	4	27	91	6
Bendemeer: holotype and paratypes	—	5	—	—	—	5	—
Total: all specimens	16	111	9	4	27	96	6

Three specimens with mutilated or abnormal toes have been excluded from the lamellar counts, making the total examined 133 against 136 examined for midbody scale counts.

Tails in only 45 of the 136 specimens of *H.d. davisi* are complete. Others are in all stages of regeneration, ranging in length from 5 mm. to 76 mm. Some closely simulate undamaged tails, others being blunt and a few ending in short spines.

Loveridge (1934, p. 370) apparently included specimens of *H.d. davisi* under *Siaphos equalis* (Gray). Under the heading of *Siaphos equalis* he makes the following remarks and gives a key to separate *Siaphos equalis* and *Hemiergis decresiensis.*

"Numbers 10189–10191 were received as *Hemiergis decresiense,* a species which they closely resemble. Apart from the scaly lower eyelid, a character which is often somewhat obscured, the two may be distinguished as follows:

Midbody scale rows 18–22, average 20; lamellae beneath median toe 3–6. Total length 137 mm. .... *equalis.*

Midbody scale rows 24–26, average 24; lamellae beneath median toe 7–9. Total length 103 mm. .... *decresiense.*"

The key is valid when only *H.d. decresiensis* and *H.d. continentis* are considered but places specimens of *H.d. davisi* and *H.d. talbingoensis* under *Siaphos equalis.*

Loveridge apparently did this with his Salisbury (M.C.Z. 10190–1) and Hartley Vale (M.C.Z. 10189) specimens. His three lizards were received from the Australian Museum. Those from Salisbury are certainly part of a large series collected in that locality by D. A. Porter in June, 1900, an entry noting the exchange occurring in the museum register. The 12 specimens of the series remaining in the Australian Museum are undoubtedly *H.d. davisi.* Salisbury individuals differ from any others that I have examined in having very small transparent discs. The discs, though small, are distinct. The lizards are typical in colouration, pattern and scalation.

It may be mentioned here that the lowering and widening of the Cassilis Gap may be expected to split *H.d. davisi* into Central Tableland and Northern Tableland races.

Identification of *Siaphos equalis* (Gray) with *Hemiergis decresiensis* is of long standing. Duméril and Bibron (1839, p. 766) include *Seps aequalis*, ? *Siaphos aequalis* and *Peromeles aequalis* in the synonymy of *H. decresiensis*, which species they attribute to themselves.

Steindachner (1867, p. 50) also synonymizes *Siaphos equalis* with *H. decresiensis.* His five specimens from Sydney were almost certainly all *S. equalis.*

Günther (1867, p. 48) (see reference under *H.d. decresiensis*) may have made his comparison either with *H.d. davisi* or *Siaphos equalis.* Both agree with the two diagnostic points he noted—18 or 20 midbody scale rows and toes less developed than in Kangaroo Island specimens. On the grounds that individuals of *H.d. davisi* with 18 midbody scale rows are comparatively uncommon and that collections would more probably have been made near Sydney (where *S. equalis* is abundant) than on the tablelands, I am inclined to think that the comparison was made with *S. equalis.*

In a reference to *Hemiergis decresiensis*, H. Claire Weekes (1929, p. 43) says: "Although the oviparous species appear to be more or less restricted to lower levels, many of the viviparous lizards flourish at all altitudes, *Tiliqua scincoides, Egernia whitei, E. cunninghami, E. striolata, Lygosoma* (*Hemiergis*) *decresiensis* and *L. quoyi* having been collected in large numbers in coastal districts little above sea-level."

Three criteria—"large numbers, coastal districts and little above sea-level"—suggest that the lizard noted as *Hemiergis decresiensis* is *Siaphos equalis.*

Seven specimens of *H.d. davisi* in the Australian Museum (R.3613–8; R.3618, two specimens) are labelled Southern Australia. As the locality is indefinite and Boulenger (1887, p. 327), by whose description and key the lizards were probably identified, gives the range as "Southern Australia", it is probable that the locality was only written in at the time of identification for the sake of completeness.

Distribution.—The northern range of *H.d. davisi* may be expected to extend only slightly beyond Llangothlin, the present extreme record in the author's collection, although the same ecological conditions persist to the Macpherson Ranges on the Queensland border. As far as I am aware no specimen of *Hemiergis* has been found north of Llangothlin although fairly extensive collecting has been carried out in this area, especially the Macpherson Ranges. Searches made by me at Bungulla, 82 miles north of Llangothlin and Wilson's Peak at more than 3,000 feet on the Queensland border have been unsuccessful. The low-lying Lake George senkungsfeld forms the southern boundary of the subspecies. The definitive characters of *H.d. davisi* and *H.d. talbingoensis* become more marked as we move away from this zone, particularly so northward for *H.d. davisi.* No exact line can be drawn to separate the two forms, but this may follow in time if the populations on each side of this belt of dilution in numbers breed true. It is more probable that a zone of hybridization will persist. The present condition is apparently a stage in which neither of two gene-complexes has assumed complete dominance.

VII. Relationship of the Four Subspecies.

The two following tables illustrate the gradual reduction in number of midbody scale rows and mid-toe lamellae from the closely allied *H.d. decresiensis* and *H.d. continentis* through *H.d. talbingoensis* to *H.d. davisi.*

Table of Midbody Scale Rows.

Scale Rows	18	20	22	24	26	Average.
H.d. decresiensis (6 specimens)	—	—	—	6	—	24·00
H.d. continentis (20 specimens)	—	—	—	19	1	24·10
H.d. talbingoensis (94 specimens)* ..	—	14	78	2	—	21·74
H.d. davisi (136 specimens)	16	111	9	—	—	19·90

* Two specimens with 21 rows not included.

Scale rows should be counted exactly at midbody for the sake of uniformity. There is little chance of making a mistake in most specimens, but in some, additional rows from before or behind approach midbody.

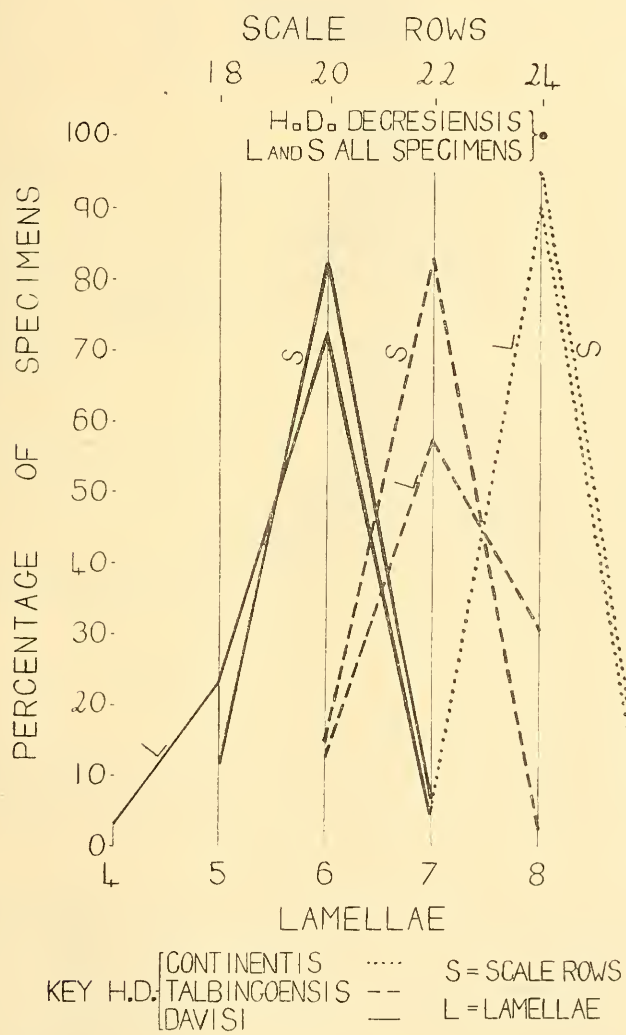


Fig. 4.—Graph showing the close agreement between midbody scale and mid-toe lamellae characters in each race; also the concentration of individuals at three modal centres, illustrating close relationship between *H.d. decresiensis* and *H.d. continentis* and separation of the other two subspecies. The graph gives an exaggerated idea of overlap.

Table of Mid-toe Lamellae.

	Number of Lamellae. 4	5	6	7	8	9	Average.
H.d. decresiensis (6 specimens)	—	—	—	—	6	—	8·00
H.d. continentis (20 specimens)	—	—	—	1	18	1	8·00
H.d. talbingoensis (96 specimens)	—	—	12	55	29	—	7·18
H.d. davisi (133 specimens)* ..	4	27	96	6	—	—	5·77

* Three specimens, R.3982, toes mutilated ; A.C.524, 7 on right, 6 on left ; A.C.1717, 6 on right, 7 on left ; are not included.

The following table gives the number of specimens against body lengths, which have been tabulated in classes, in the four subspecies.

	Body Lengths in mm. 23–27	28–32	33–37	38–42	43–47	48–52	53–57	58–62	63–67	68–72
H.d. decresiensis ..	1	—	1	2	2	—	—	—	—	—
H.d. continentis ..	—	—	1	1	10	6	2	—	—	—
H.d. talbingoensis ..	1	5	4	—	4	25	32	20	5	—
H.d. davisi	1	1	—	4	10	20	36	28	27	9

Body lengths gradually increase from *H.d. decresiensis* to *H.d. davisi.* No specimen of *H.d. decresiensis* (average length 37·83 mm.) exceeds 45 mm. Forty per cent. of *H.d. continentis* (average length 47·00 mm.) are in excess of 47 mm., the largest being 54 mm., but none enters the three largest groups. Twenty-five specimens of *H.d. talbingoensis* (average length 52·40 mm.) exceed 57 mm., five being in the 63–67 group (longest 64 mm.). Twenty-seven individuals of *H.d. davisi* (average length 56·69 mm.) enter the 63–67 group and nine extend into the 68–72 group, being the only one of the four subspecies to do so; the longest specimens are A.C. 1799 and A.C.1800 from near Hampton, which each measure 72 mm.

The average separation of the prefrontals compared to the width of the frontals gives a measure to a diagnostic character of the genus *Hemiergis*—well-developed prefrontals. In *H.d. decresiensis* the average separation is 0·108 (no specimens with prefrontals in contact), in *H.d. continentis* 0·155 (2), in *H.d. talbingoensis* 0·139 (15), and in *H.d. davisi* 0·218 (9).

Lizards of the four races are found at greater heights above sea-level as we proceed northwards. This is more probably due to the fact that suitable habitats are only found in New South Wales at higher altitudes than in southern states than to any direct response of the animals to the effects of altitude.

Key to the four races of Hemiergis decresiensis.

Midbody scale rows 24 or 26, lamellae under mid-toe 8 (few 7 or 9).
- Body short (average less than 40 mm.), habitus slender .... *H.d. decresiensis*
- Body longer (average more than 45 mm.), habitus more robust .... *H.d. continentis*

Midbody scale rows 22 (exceptionally 24, few 20, average 21·74), lamellae under mid-toe 7 (few 6 or 8, average 7·18) .... *H.d. talbingoensis*

Midbody scale rows 20 (few 22 or 18, average 19·90), lamellae under mid-toe 5 or 6 (few 4 or 7, average 5·77) .... *H.d. davisi*

VIII. Conclusions.

The question of the evolution of the four races cannot be decided finally, but a satisfactory hypothesis is that *H.d. continentis* most closely approaches to the parent form and that the genetic trend is towards reduction in the number of midbody scale rows and subdigital lamellae, to mention two important characters, *H.d. continentis* with its high number of scale rows and uniformity in other characters appears to be the most conservative race. Isolated from the mainland, *H.d. decresiensis* remained essentially unchanged but became smaller and slimmer in habitus. *H.d. talbingoensis* developed into the widespread race of the Southern Tableland of New South Wales by the reduction of midbody scale rows to 22. The population of the type locality, Talbingo, is most uniform,

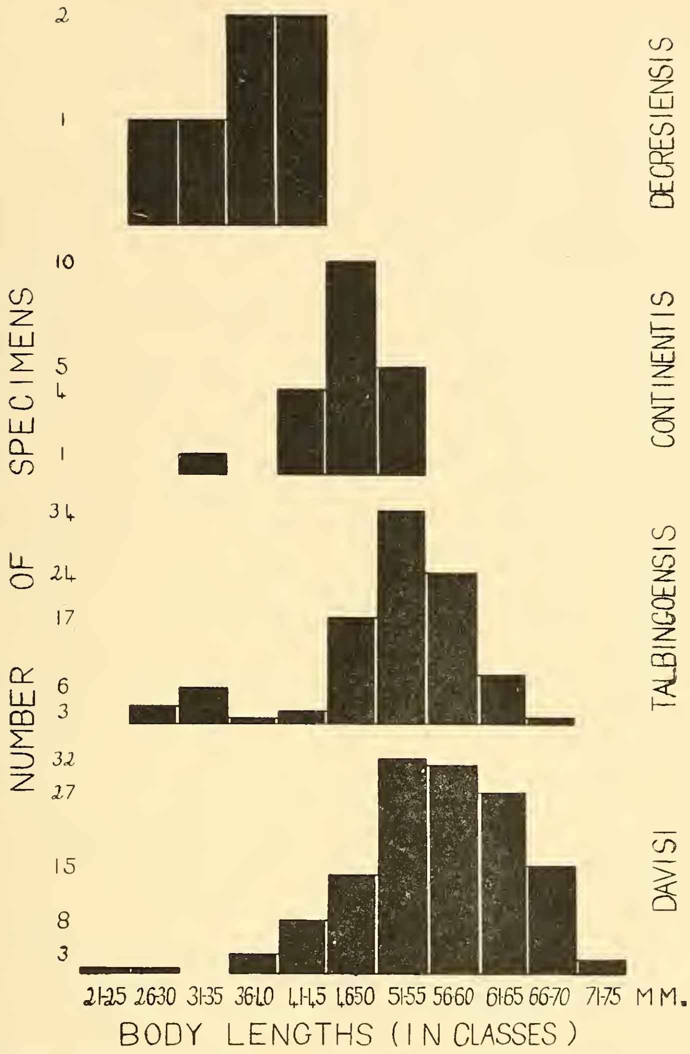


Fig. 5.—Graph, based on slightly different classes to those in the foregoing table, showing body lengths shortest in the insular race, an increase in the nearest continental population, and then two further increases by way of *H.d. talbingoensis* to the most northern form *H.d. davisi.*

yet two specimens of the series of 53 still have the relict number of 24 midbody scale rows. From this viewpoint specimens with 20 rows must be taken as members of the advance guard of *H.d. davisi* and probably indicate that there will in time be a general reduction to this number. *H.d. davisi* must be taken as a form in which rows have been reduced to 20. The few individuals with 22 show that absolute uniformity has not been reached. In some centres reduction to 18 rows is proceeding and it is impossible to judge to what extent this change will be carried. Northern Tableland populations have been practically unaffected by the trend towards 18 midbody scale rows, but those in parts of the Central Tableland are altering rapidly. Rare examples of *H.d. davisi* with 22 rows may be regarded as living in comparatively isolated centres. Migration, with its interchange of genes and consequent establishment of new characters, must be very slow for the weak limbed, cryptozoic *H. decresiensis.* Even more mobile lizards, which have apparently excellent means of distribution, have little tendency to migrate—see G. K. Noble's studies as noted by Dobzhansky (1937, p. 145)—and voluntary movements of individuals in sufficient numbers to allow establishment in new territory are probably only brought about by gross overcrowding. No evidence of this state of affairs has yet been adduced for the species. Carriage in logs during floods is probably the only accidental means of dispersal, yet this must be an unimportant factor because the animals generally lie in the mould under logs and not in them, the slopes they frequent are unlikely to be flooded sufficiently to move logs of any size, turbulent mountain streams would be an unsuitable medium for the prolonged carriage of passengers, and the odd individual carried downstream would probably most often find itself in unfavourable surroundings. Establishment of characters to the order of a new race would be always slow and, as many factors are involved, more complex than say the rapid change from red to white head colour in the African Barbet (*Lybius torquatus*) in southern Nyasaland (Mayr, 1942, p. 77). The odd individual of *H.d. decresiensis* with 26 midbody scale rows may indicate that the parent stock was originally uniform at this high number. All four races agree with the condition of Mayr (1942, p. 16) that "in the case of subspecies, it is a good convention that at least 75 per cent. of the individuals in one subspecies (or of the available specimens) should be separable, on the basis of their diagnostic characters, from the specimens of the most similar subspecies". Where one subspecies has practically replaced another and in its turn is being replaced by a third, as in *H.d. talbingoensis*, the subspecies must be defined (*inter alia*) as a group of individuals, the great proportion of which have attained distinctive genetic stability (as indicated by diagnostic taxonomic characters) but which contains a small percentage of specimens of the older subspecies which it is replacing as well as a small percentage of the newer subspecies which is replacing it. The alternative to accepting these qualifications, with their essential simplicity and which give a true picture of the fluid state of the species—the distinctive races of which are being modified—is to treat each colony or group of similar colonies in each area as a unit. Only homogeneous, pure-bred populations could be considered as belonging to a rigidly defined subspecies. With this static concept there would be many pockets of one subspecies within the range of another and wide zones of hybridization.

IX. Western Australian Records.

Hemiergis decresiensis has been listed several times as occurring in Western Australia. Records for this State should almost certainly be attributed to *Hemiergis tridactylum* (Boulenger), an exclusively Western Australian form.

One reason for misidentification is probably that *H. tridactylum* was not described until 1915, Boulenger (1915, p. 65), whereas the key in Boulenger's catalogue, which would be consulted for identification in most cases, was printed in 1887 and would result in *H. tridactylum* being identified as *H. decresiensis* (1887, p. 223). The two species are similar in being tridactyle, but in *H. tridactylum* midbody scale rows are 18 or 20 and the third toe is much longer than the second against 24 or 26 rows for South Australian *H. decresiensis*, which have the second toe slightly longer than the third. The only specimen of *H. tridactylum* I have seen, Australian Museum R.2454, collected at Perth, is, among other characters, also separated from *H. decresiensis* by colouration, incomplete differentiation of the transparent disc, and by the number of subdigital lamellae, left, 6, 9, 11; right, 6, 9, 12. *H. tridactylum* is evidently extremely common in some Western Australian localities. The Harvard Museum of Comparative Zoology has 60 specimens collected at Augusta in 1927 by W. S. Brooks (Loveridge, 1934, p. 368).

Waite (1929, p. 161), who gives the range of *H. decresiensis* as "Western and South Australia, Victoria and New South Wales", may have followed Zietz (1920, p. 216), who gives the same range.

Werner (1910, p. 481) possibly was the authority for these two authors. He had five lizards from Lunenberg and Donnybrook, which he identified as *H. decresiensis*. The specimens had 20 midbody scale rows, which suggest *H. tridactylum*. Lunenberg and Donnybrook are in the same area as Yallingup, the type locality of *H. tridactylum*, and Augusta, Margaret River, Wallcliffe and Manjimup, where it has been collected.

Günther (1867, p. 48), who separated his *H. polylepis* from *H. decresiensis* mainly on the grounds that it had 26 rows of scales at midbody against 18 or 20 (see under *H.d. decresiensis*) could not have had *H. tridactylum* as his material because he says the toes of his specimens with 26 rows were "more developed" than in his type with 18 or 20.

It is a coincidence that Gray (1845, p. 87) originally noted the single British Museum specimen of *H. decresiensis* as from the Swan River. The locality was corrected in the same volume (p. 272) to Kangaroo Island.

Günther (1875, p. 13) evidently follows Gray's earlier entry in giving the range of *H. decresiensis*, which he attributes to Péron, as Swan River and Adelaide. Günther's succeeding entry gives his *H. polylepis* as from South Australia (Kangaroo Island).

Mr. L. Glauert, Curator of the Western Australian Museum, wrote to me on 1st December, 1943: "*Hemiergis decresiensis* is not represented in our collection, nor does it occur in this State as far as I am aware, in spite of what certain lists say. We have, however, a species *Lygosoma (Hemiergis) tridactylum* Boulenger, which was originally described as a variety of *peronii*."

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EXPLANATION OF PLATE VI.

Figs. 1-4.—Dorsal views of the four races of *Hemiergis decresiensis*.
Fig. 1.—*H.d. decresiensis*, topotype, No. R.2191.
Fig. 2.—*H.d. continentis*, holotype, No. R.2190.
Fig. 3.—*H.d. talbingoensis*, holotype, No. A.C.2081.
Fig. 4.—*H.d. davisi*, holotype, No. A.C.821.

Body lengths of specimens are 45, 52, 60 and 60 mm. respectively.

Photos.—Miss A. G. Burns.